PAPER TRADE JOURNAL

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

PULP

PERKINS-GOODWIN CO.
Established 1846
30 ROCKEFELLER PLAZA, NEW YORK

PAPER

7
5
10
2

APRIL
21
1938

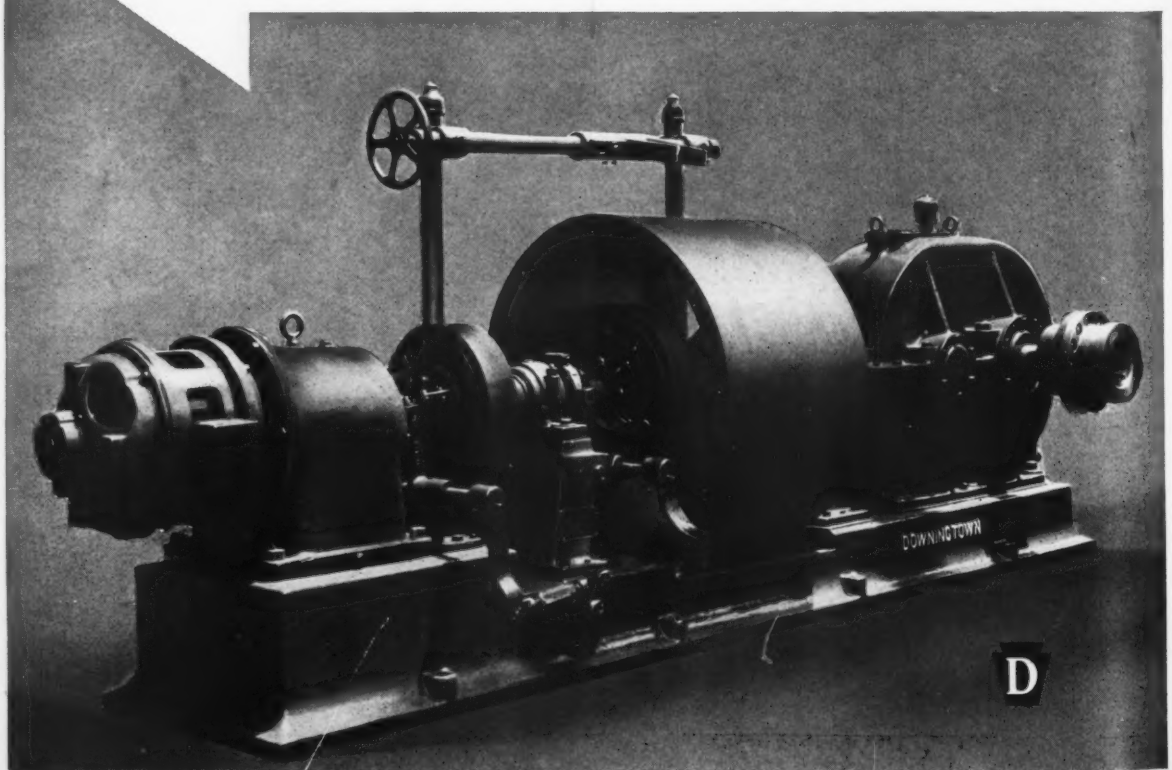
Vol. CVI
No. 16

DOWNINGTOWN

Modern Motorized Reversing Mechanism
Totally enclosed double reduction spiral bevel gear unit—Continuous splash lubrication system—Gears and shafts heat-treated
All shafts operate in anti-friction bearings.

REVERSING CALENDER DRIVE

Quiet, Cool Running Unit—96% to 98% Efficient
Modern construction is insurance against breakdowns, losses in production and excessive maintenance charges—This is only one unit in our complete line of modern floor drives.



DOWNINGTOWN MANUFACTURING CO., DOWNINGTOWN, PA.

Entered as second class matter at the Post Office at East Stroudsburg, Pa., under the Act of Congress of March 3, 1879. Published every Thursday by the Lockwood Trade Journal Co., at 34 N. Crystal St., East Stroudsburg, Pa. Executive and Editorial office: 15 W. 47th St., New York, N. Y.

Le Blanc Forced by the French Tribunal to Make His Patent Public.

Through The Centuries With Alkalies

Nicholas Le Blanc is known as the father of modern soda manufacture. His invention was mothered by necessity, for he won a reward of 2400 livres offered by the French Academy of Science in 1775 when the Seven Years' War with England and the Napoleonic Wars throughout Europe shut off France's supply of Spanish barilla from which most soda was made at that time. The French Revolutionists robbed Le Blanc of the fruits of his invention and he died in 1806 a suicide in an almshouse. His process, however, was so nearly perfect that it endured with little change for over 50 years.

Splendid as Le Blanc's achievement was, the soda produced to meet today's exacting standards is of a quality undreamed of in that earlier era. COLUMBIA'S well-known reputation for setting these standards still higher, backed by its air-tight system of control, insures its customers a product second to none in quality . . . which includes purity, uniformity and whiteness.

SODA ASH
CAUSTIC SODA
SODIUM BICARBONATE
MODIFIED SODAS
LIQUID CHLORINE
CALCIUM CHLORIDE

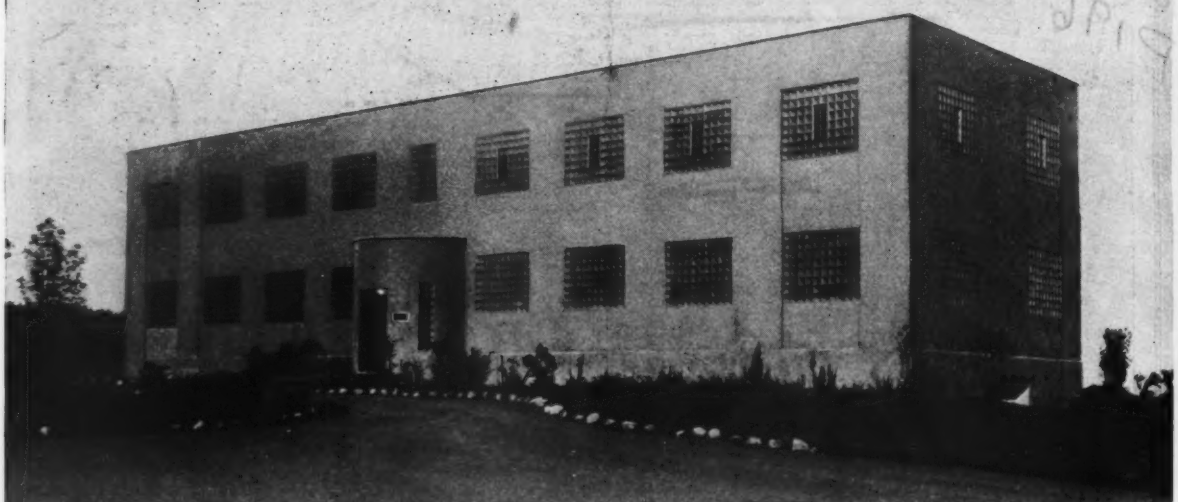
COLUMBIA

THE COLUMBIA ALKALI CORPORATION

BARBERTON • OHIO

NEW YORK CHICAGO BOSTON PITTSBURGH
CLEVELAND CINCINNATI ST. LOUIS MINNEAPOLIS

1884-1938



Fifty-Four Years Specialized Experience—
Designing and Installing SEMCO Linings

CORROSION-RESISTING LININGS FOR

Acid Accumulators
Acid Tanks
Acid Towers
Beaters
Bleaching Tanks
Blow Pits
Chests
Chlorinators
Combustion Chambers
Digesters
Towers
Washers

Many individual elements have combined to develop the unequalled reputation which Stebbins Acid-Resisting Linings for pulp and paper mill vessels have enjoyed for over half a century. Sound mechanical design — chemically correct ceramic materials and bonding cements — superior workmanship — all contribute their essential parts.

Materials and men are always available at strategic points, ready to get on the job — practically at a moment's notice — whether the work be a new lining installation, a relining or a repair.

All Stebbins Linings carry a definite guarantee of satisfactory service which they invariably outlive. Let us demonstrate the superiority of Stebbins Linings and service the next time you line a new vessel or reline an old one.

SEMCO

Stebbins Engineering and Manufacturing Company

WATERTOWN, NEW YORK

Condor Compensated Belt still running after five years operating Pulmax Drive on Trimbey Screen in paper mill. 52 in. driving pulley runs at 200 R.P.M.; driven pulley is 24 in. with 12 in. idler. Belt is 8 in. 7 ply, 32 ft. 10 in. long.

AN UNUSUAL PERFORMANCE...

Condor Compensated

PATENTED

TRADE MARK REGISTERED

The Belt with Equalized Ply Stresses

Still a Steady Worker After Five Years

Condor PRODUCTS

V-Belt
Compensated Belt
Conveyor Belt
Air Hose
Acid Hose
Water Hose
Fire Hose
Steam Hose
Suction Hose
Molded Rubber Goods
Oilless Bearings
Screen Diaphragms
Industrial Brake Blocks and Lining
Abrasive Wheels

*12 ADVANTAGES

1. Ruptures in outside ply eliminated.
2. Freedom from ply separation.
3. Longer fastener life.
4. Can be operated on smaller pulleys.
5. Less bearing, shafting and hanger troubles.
6. For heavy loads, plies may be increased with same pulleys.
7. Operation less affected by atmospheric conditions.
8. Higher overload capacity or margin of safety.
9. Less wear on pulley side.
10. Can be dressed without injury to belt.
11. High production efficiency.
12. Material reduction in belting costs.

Also available in Type F where rubber friction pulley surface is desired, and Type B where some slip is necessary.

IT WAS way back in December 1932 when this Condor Compensated Belt was put on a Pulmax Drive in a large New England paper mill. Now going into its sixth year, the belt is still transmitting power efficiently, economically day after day . . . without once having been taken up or removed from the pulleys.

Performance like this gives you an idea of what to expect when Condor Compensated Belt is put on your drives. Manhattan's exclusive design compensates each ply in Condor Compensated to bear its share of the load when the belt flexes around the pulley. By this construction, stresses and strains developed at the arc of contact—where the destructive work is done—are equalized . . . and 12 advantages* result that assure top performance even on the toughest drives. A special pulley surface permits low tension operation.

If you want to increase production—at the same time cutting operating and maintenance costs—put Condor Compensated Belts on your drives.

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES AND FACTORIES, 35 TOWNSEND ST., PASSAIC, N. J.

PHOSALOY WIRES
APP-WELD
PATENTED
SEAMLESS JOINT

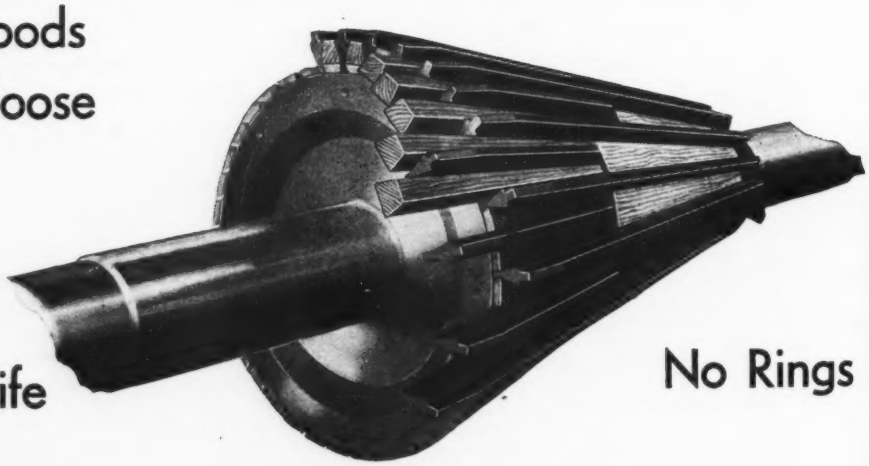
APPLETON

WIRES ARE *Good* WIRES

APPLETON WIRE WORKS INC., APPLETON, WIS.

THE BOLTON WEDGELESS PLUG

Inverted Woods
Can't work loose



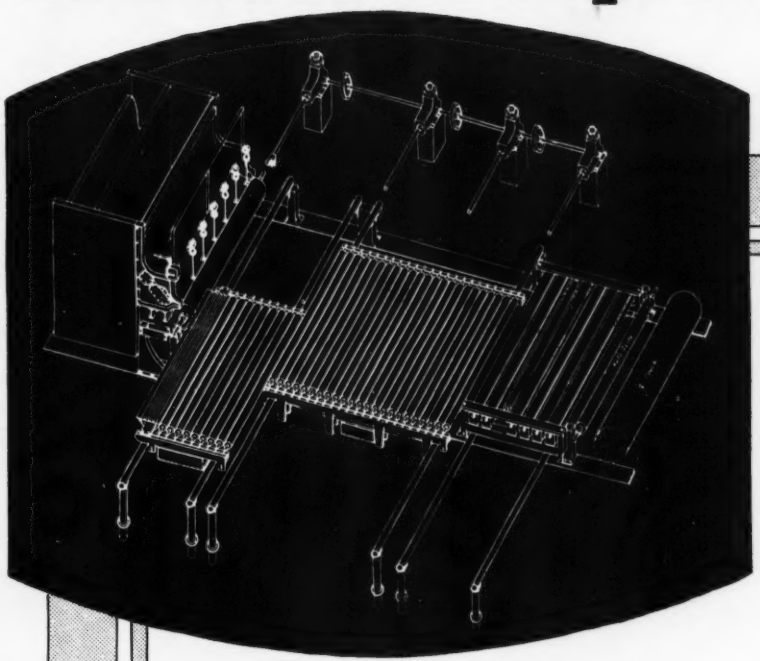
Takes
Any Size Knife

No Rings

EMERSON MANUFACTURING CO.

DIVISION OF JOHN W. BOLTON & SONS, INC.
LAWRENCE, MASS.

You asked for these NEW Fourdrinier improvements



You asked for certain Fourdrinier improvements, and here they are, brought to you by Black-Clawson. In these improvements lies your opportunity to bring your present equipment up-to-date a step at a time . . . your opportunity to make it simpler in design, lighter in weight, easier to operate, and corrosion resisting throughout.

Look at these B-C developments, without which no Fourdrinier can be called truly modern.

(1) Simplified construction.
(2) Light weight, non-corrosive.
(3) New simplified, easily controlled flow box.
(4) An oscillating rectifier . . . something entirely new.
(5) Specially designed formation table.
(6) Lower table roll section.
(7) Non-corrosive table rolls, bearings, and supporting structure.
(8) Multi-sectional table roll section . . . easy to move out.
(9) All operating controls in view and easy to reach.

Why haven't these improvements been offered before? Simply because only Black-Clawson has conducted the necessary years of research . . . only they have really dug beneath the surface to do something about developing the design features you have so insistently demanded.

Consider the adoption of one or more of these features as you modernize your old Fourdrinier step by step. Call in a Black-Clawson sales engineer to talk it over. The Black-Clawson Company, Hamilton, Ohio, Owners of Shartle Brothers.

BLACK-CLAWSON

R

Suffering from high power cost?

Accurate sheaves often make the difference between a good drive and a bad one: *for power-thrifty performance choose* WOOD'S V-BELT DRIVES.

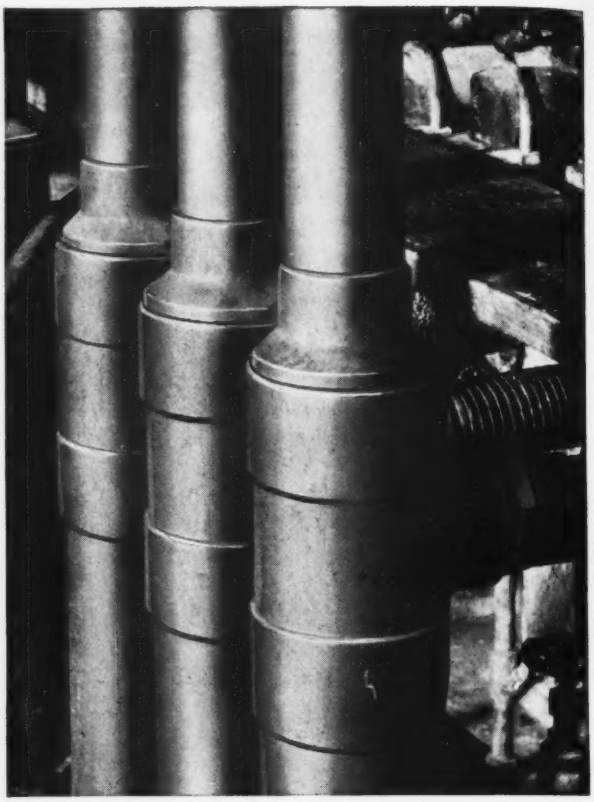
Sheaves that are absolutely true—with sheave grooves that are accurately spaced, with side walls that are at perfectly uniform angles. Belts that are full moulded, flexible, resilient and enduring. Efficiencies that often reach 98%.

Sure cure for transmission troubles.

T. B. WOOD'S SONS COMPANY

CHAMBERSBURG, PENNSYLVANIA

MEMBER POWER TRANSMISSION COUNCIL



CHASE Copper

TUBE and FITTINGS for PAPER MILL PIPING

Chase Copper Tube, Type "O", is an inexpensive, lightweight piping especially designed for paper mill use. It is rust-proof and, being resistant to slime and acid-corrosion, it is used for stock lines, white water lines, starch lines, suction lines and general water supply lines.

Type "O" Water Tube may be obtained in either Copper or Red Brass, and is made in sizes up to fourteen inches. Copper Tube is carried in stock in sizes from 3" to 12" inclusive. Larger sizes of Copper and all sizes of Red Brass are made to order.

CHASE

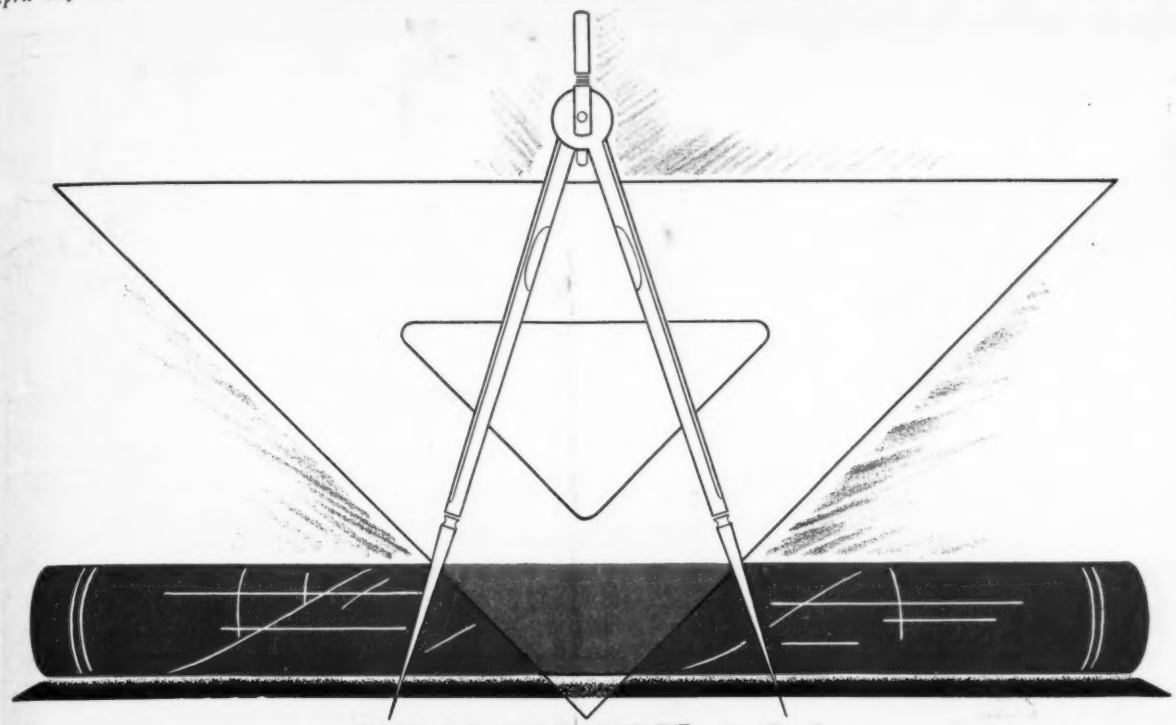
Chase engineers, qualified to deal scientifically with paper mill problems involving the use of copper and its alloys, will be glad to consult with you without obligation.

CHASE BRASS & COPPER CO.

— INCORPORATED —

Subsidiary of Kennecott Copper Corporation

WATERBURY CONNECTICUT



DESIGN #ZK-OOO

By S & W — *for Progressive Mills*

When S & W engineers fashioned the Undercut ream cutter, they were shooting at two marks — safety, with more than ordinary efficiency.

Safety comes from the design. Gravity, itself, is a positive safety feature. And dual controls keep the operator's hands below the table. Accidental starts are impossible: There's less spoilage.

The always-aligned knife (which can be installed by one man) delivers a *straight* upward cut. No slipping, perfect lay, and easier pad work come from this vibrationless cut stroke. There is an equalized hold of clamp.

Some mills have purchased as many as 30 Undercuts for work on the finest grades of paper. Equal success is obtained on bindersboard, cardboard, etc.

Will your mill modernize? We'll gladly send you a bulletin on Undercuts. Just have your secretary write for it.

The SMITH & WINCHESTER

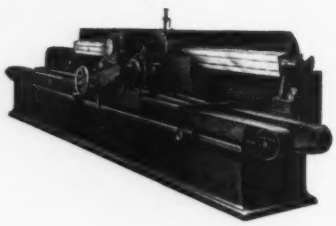
Manufacturing *Company*

1828

ONE HUNDRED AND TEN YEARS OF ADVANCEMENT

PLANT AND OFFICES AT SOUTH WINDHAM, CONN.

UNUSUAL PAPER KNIFE GRINDING SERVICE



The unusual in knife grinding service (extreme accuracy with speed) is fast becoming commonplace through the nearly universal adoption of the important advances made by the Covel-Hanchett Co. It is just a matter of course that you will find most of the new paper mills equipped with the Covel-Hanchett Mammoth Traveling Wheel Grinder, in accordance with the latest developments in that field.

Accuracy—To the highest degree.

Speed—More than doubled.

Grinding Wheel Expense—Cut one-third to one-half.

Floor Space—One-half that required for traveling carriage machines.

Carriage Ways—Completely covered with new patented way-cover system, with automatic force-feed lubrication.

Grinding Wheel Spindle—But we can't tell it all here.

Send for catalogue describing all the new features. You will be surprised at the advances made —By the Pioneers in the Industry.

COVEL-HANCHETT CO.,
Big Rapids, Michigan, U. S. A.

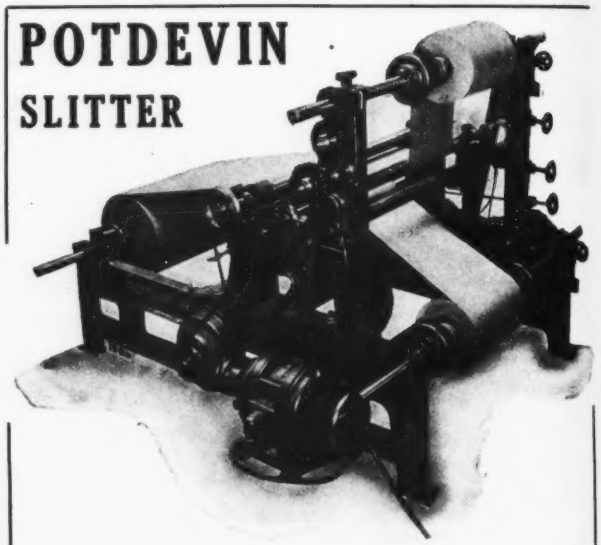
THE DRAPER FELTS

All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

DRAPER BROS. COMPANY
CANTON, MASS.
Woolen manufacturers since 1856

POTDEVIN SLITTER



with HIGH-SPEED PATENTED DIFFERENTIAL DRIVE & DUAL SHAFT REWIND

completely automatic, clean-cut edges perfect for narrow rolls

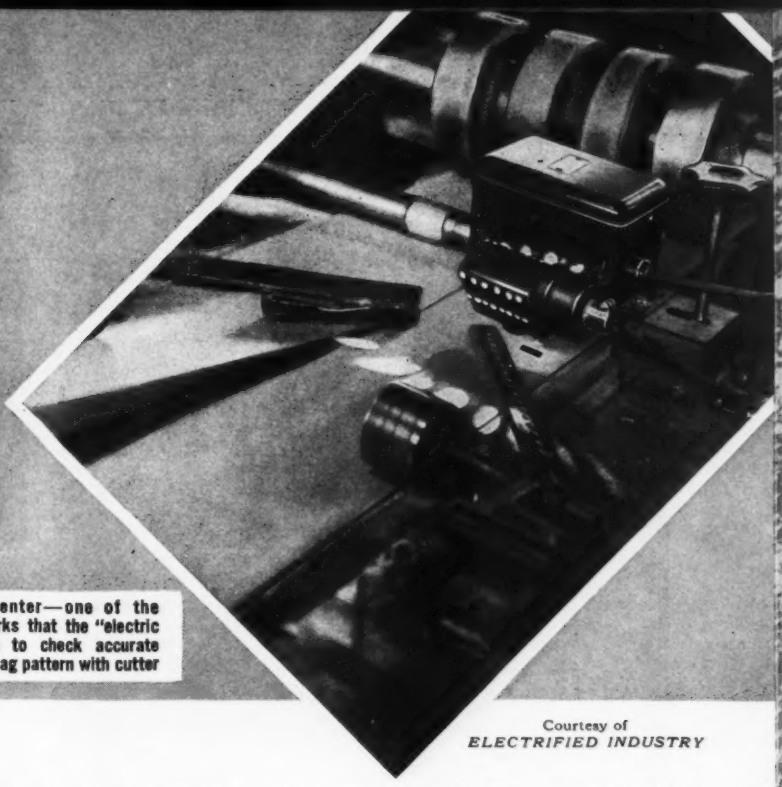
POTDEVIN MACHINE CO.
1223 38th St. Est. 1893 Brooklyn, N. Y.

To

MILL EXECUTIVES SEEKING NEW PRECISION METHODS

Now

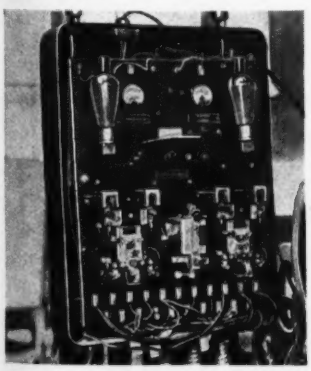
AUTOMATIC CUTOFF IS CONTROLLED BY G-E PHOTOELECTRIC RELAYS



At right center—one of the register marks that the "electric eye" scans to check accurate register of bag pattern with cutter

Courtesy of *ELECTRIFIED INDUSTRY*

Cut bag-forms ready for sealing, showing position-register marker



G-E photoelectric control panel (cover removed) for compensator driving cutting knives on Smith & Winchester tuber. These pictures are by courtesy of the Hammond Bag & Paper Co., Wellsburg, W. Va.

WORKING in co-operation, the paper industry and electrical manufacturers have "put the electron tube in overalls" in various effective ways.

One of these applications is that of paper-register control that is automatic and precise. For example: in one plant, tubes of paper that are to be made into bags are cut at exactly the right point by a machine controlled by G-E photoelectric relays. The cutting is kept within register by photoelectric scanning of a register mark for each bag pattern. The scanning mechanism governs a relay that retards or advances the cutting to compensate for any stretching or shrinking of the web of paper.

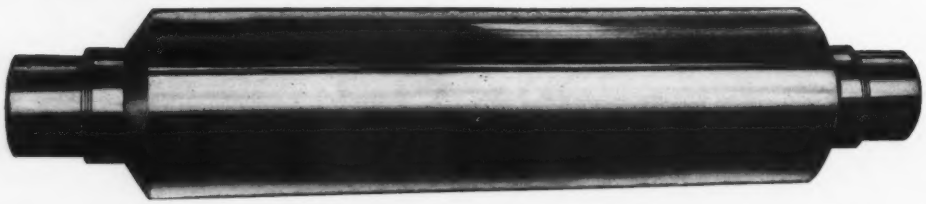
In this way the cutoff is automatically exact, this feature making possible *faster* output and well-nigh eliminating spoilage at this point in the processing.

When you require precision control of processes in which a light beam can be interrupted to actuate the control, investigate the application of G-E photoelectric relays. Because applications of the "electric eye" involve precision arrangement, requiring careful engineering and manufacturing, these applications have been limited to large-scale processes or to processes where ordinary methods have not been successful. For information on the photoelectric paper-register control, inquire of the nearest G-E sales office or write General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

Ltg No. 137 911 346

FARREL ROLLS



Help Produce Uniform, Top Quality Paper at Lower Cost

Farrel Rolls have these qualities so important in the production of paper of uniform top quality:

1. Smooth and accurate finish of bodies and journals.
2. Correct shape and amount of crown.
3. Uniform hardness and depth of chilled body surfaces.

These qualities assure trouble-free, economical performance over a long life if your calender stacks are equipped with Farrel Rolls.

They are the product of skill developed by eighty years experience in roll making, the use of only the highest grade materials, constant scientific research and close control of every manufacturing process, from metal mixture and casting to grinding and inspection.

Made in chilled iron or extra hard "Farreloy," in any diameter from 4" to 72" and any face length up to 312".

Write for full information.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

CAMACHINE 22

Uniform Density

Straight Edges

Accurate Width

FOR SLITTING CONDENSER TISSUE CIGARETTE PAPER AND NARROW STRIP OF ALL KINDS

CAMERON MACHINE COMPANY

61 POPLAR ST. BROOKLYN, N.Y.

EXCELSIOR FELTS

a product of

THE KNOX WOOLEN CO.

CAMDEN MAINE

DISTRIBUTED SINCE 1864 BY

BULKLEY, DUNTON & CO.

295 MADISON AVE. NEW YORK, N.Y.

CAledonia 5-5260 to 69

BUY PAPER ROLLS

..the way you buy a box of berries!

By means of an ingenious testing device, soft spots anywhere in the roll such as are caused by faulty paper stock or insufficient pressure are immediately detected.

Make Certain That Hardness Below the Surface is Equal to That on the Surface

Until the development of Waldron's Density Test, surface hardness was the only gauge of roll quality. No satisfactory method was available for determining the extent of the pressure applied to insure uniform density of the paper beneath the surface. Today, every Waldron Paper Roll undergoes this positive Waldron Density Test before it is shipped.

Properly conditioned paper, maximum weight and length of pressure, plus the protection of the Waldron Density Test are your assurance that Waldron Paper Rolls will give you maximum life in service.

JOHN WALDRON CORP.
NEW BRUNSWICK · NEW JERSEY

● GENERAL ANILINE WORKS, INC., ALBANY, N. Y.

In this modern plant are produced
high quality dyestuffs
to meet all the requirements
of the Paper Industry.

GDC

GENERAL DYESTUFF CORPORATION

PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Published Every Thursday by the LOCKWOOD TRADE JOURNAL CO., Inc.

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TABLE OF CONTENTS

Johns-Manville to Build Mill at Jarratt, Va.... 17
Issue Optimistic Statement.... 17
Int'l Paper & Power Reports $9,134,701 Net.. 18
Damage to Chinese Paper Mills.... 19
Inspects Northwest Pulp Mills.... 19
Quebec Prohibits Export of Anticosti Timber 20
Newsprint Production Decreases.... 20
Kimberly-Clark Workers In Safety Campaign.. 21
Trend of Chicago Paper Industry Upward.... 22
Buys Kant Leek Paper Dish.... 22
Financial News of Pulp and Paper Industry.. 23
Holyoke Paper Firms File Statements.... 23
Westinghouse Business Improving.... 23
Collins Completes Reorganization.... 23
Dr. F. H. Reichel Heads Sylvania Corp.... 23
Lake States TAPPI Discusses European Practice in Bleaching.... 24
TAPPI Kalamazoo Section Discusses Printing Ink Developments.... 26
Government Paper Awards.... 26
TAPPI Delaware Valley Section Discusses Fractionation of Pulps.... 28
Obituary.... 29
Construction News.... 30
New KVP Yankee Gets Early Start.... 31
To Handle Crocker, McElwain Lines.... 31
Editorial.... 32
Production Ratio Report.... 33
To Make Cartons at Thorndike.... 33
Technical Section
United States Patents on Paper Making.... 35
Review of the Paper Industry Literature.... 38
Analysis of Electric Power Supply System for Pulp and Paper Mills.... 42
Imports of Paper and Paper Stock.... 47
New York Market Review.... 50
Miscellaneous Markets.... 52
Market Quotations.... 54

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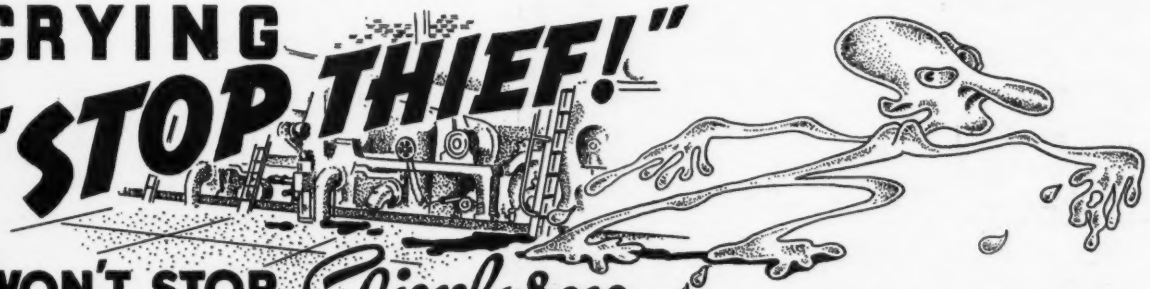
CRYING "STOP THIEF!" WON'T STOP Slimform

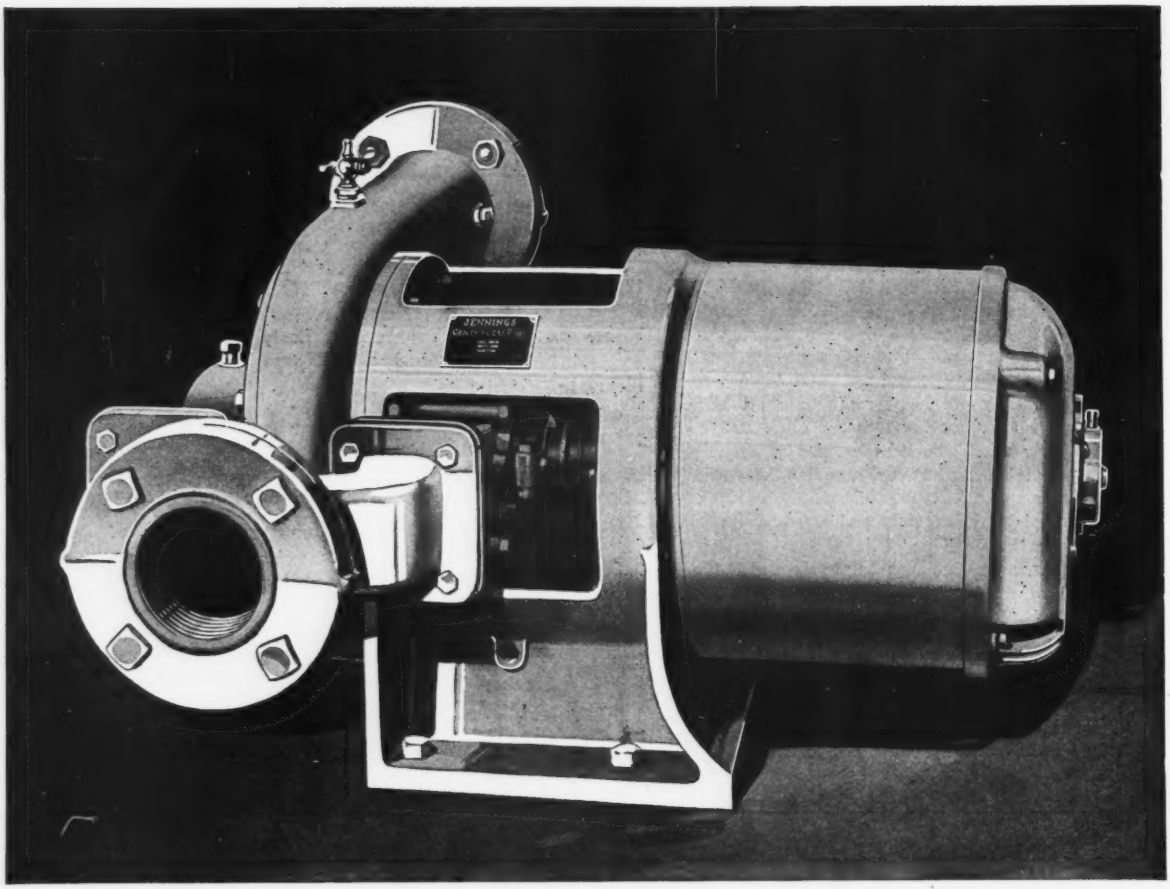


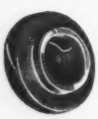
WHEN profits disappear as a result of slime troubles in paper mills—impaired quality of product, increased production costs and loss in paper making materials—it's time to investigate the proven method of slime elimination used in over 200 leading mills today.

In your mill too—controlled application of chlorine and ammonia with W & T apparatus will successfully eliminate slime at a cost of from 1½ cents to 6 cents per ton of product. Research Publication #327 "Slime in Paper Mills—Its Origin and Prevention", reviews the evidence. Write for your copy today.

Stock losses—bacterial decomposition and reworking of stock
Lowered Quality—slime spots—pin holes—objectionable odors
Increased Costs—in water—heat—labor—chemicals
Maintenance Troubles—blinded wires—plugged felts
Frequent Clean-ups—slime breaks—poor sheet formation
Obstruction of Lines—stock and white water lines
Recirculation Difficulties—slime growths in recirculated systems
Mechanical Strain on felts and wires—shortened useful felt and wire life

WALLACE & TIERNAN CO. INC.
Manufacturers of Chlorine and Ammonia Control Apparatus · NEWARK, NEW JERSEY · Branches in Principal Cities
OTHER W&T CONTROL SERVICES:
Automatic pH Control Dry Chemical Feeders Bleach Plant Equipment Testing Instruments for Chlorine and pH





Non-Clog type impeller for solids up to ½ inch.

If solids run up to 7/8 in. this will do the job.

An impeller for heavy sewage with solids up to 2 3/8 inches.

THE JENNINGS CENTRIFUGAL PUMP.

Manufactured in a variety of designs to meet individual plant needs. Furnished in standard and self priming types. Standard close coupled type shown above is very compact and may be installed anywhere. Suction and discharge assembled in any desired position. Impeller designs engineered for high efficiency, and in variety to meet any type of service. Also in unit assembly with Nash Vacuum Pumps for combinations of liquid and air. Bulletin 236 tells the story. Your copy is waiting.

NASH ENGINEERING COMPANY
SOUTH NORWALK. CONNECTICUT, U. S. A.

Efficient closed impeller for clear liquids.

A closed impeller for Double Suction Pumps.

This Air Rotor makes our Suction Centrifugal-self priming.

PAPER TRADE JOURNAL

Reg. U. S. Pat. Off.

SIXTY-SIXTH YEAR

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with Paper Trade Journal.

Vol. CVI, No. 16 Thursday, April 21, 1938

Established Sept. 21, 1910
Consolidated Feb. 19, 1925
with Paper Trade Journal.

Johns-Manville To Build Mill At Jarratt, Va.

Project For Which Financial Provision Was Made In 1937, But Which Was Delayed By The Uncertainties Of Business, Will Now Be Carried Out—Quantities of Southern Pine To Be Used To Make Insulating Board.

Lewis H. Brown, president of Johns-Manville Corporation, has announced the organization of a Virginia subsidiary which has acquired 142 acres of land near Jarratt, Virginia, on which it will erect a new paper mill for the manufacture of insulating board products.

"Provision for this new manufacturing unit," Mr. Brown said, "in addition to other items, was made with the issuance in 1937 by Johns-Manville of additional shares of common stock, but mounting uncertainties on the business horizon delayed decision to undertake a new project of this size. Now we have decided to go ahead."

Requiring an expenditure of over a million dollars, construction of the new plant will be started immediately. When it gets into full operation near the end of 1938, between 300 and 400 persons will be employed. A small experienced staff will be recruited from other plants of the company to supervise and train the local plant personnel, but, in making the announcement, Mr. Brown stated that it is the policy of Johns-Manville in its manufacturing operations to employ local labor, and this policy will be carried out at Jarratt.

T. E. Reese, well known Jarratt business man, has been engaged by Johns-Manville as its representative at this new location; and R. F. Bower, representing E. A. Sterling, nationally known forester, was engaged by J-M several months ago to organize a wood procurement program.

Large quantities of Southern pine from the locality will be used to provide the wood pulp from which J-M Insulating Board products are to be made. It was announced that this will be utilized on a sustained yield basis, and the company will encourage reforestation in nearby areas in accordance with the best practices recommended by the American Pulp Wood Association and the Virginia State Department of Conservation.

The type of light weight sheet which is produced from this wood fibre is highly moisture-resistant, structurally strong, and possesses marked insulating value. It is widely used as sheathing on the outside walls of frame buildings, and as insulating lath for plaster. The material is also manufactured into decorative forms for walls and ceilings of homes and commercial buildings. Johns-Manville Insulating Board is one of the popular materials used in home remodeling and in new house construction. It is also manufactured by the company at its Oswego, N. Y., plant. The construction of the new factory at Jarratt will raise to 16 the total number of Johns-Manville plants and mines in the United States, Canada and in Europe.

The new factory will be served by the main lines of the Virginian Railway and the Atlantic Coastline Railroad, and will be ideally situated for the shipment of materials to principal insulating board markets in the north, south, east and west, and for export through Virginia ports.

Issue Optimistic Statement

WATERTOWN, N. Y., April 18, 1938—An official of the Bagley & Sewall Company issued a statement this week regarding the sound condition of the concern and also an optimistic prediction as to its business in the near future. The statement followed disturbing rumors being circulated about the company which manufactures machinery for the pulp and paper industry. President C. W. Valentine claims the rumors are wholly unfounded and pointed out that while the company shops are now at a low level of activity due to the depression the financial status is the best in a decade. The last business setback has resulted in a falling off in demand for paper mill equipment and consequently the concern has had no large orders since the first of the year. Prospects for some brisk business are understood to be good, however, as soon as national conditions straighten themselves out. The company like practically all other business concerns suffered extensively from the long depression which badly depleted its reserves, according to Mr. Valentine, but with the better conditions starting about the middle of 1936 and lasting through 1937 it greatly improved its position as to organization, plant and equipment. This made possible the cleaning up of such financial obligations as had been necessitated by the depression. The company's greatest regret is that the finishing of the large orders obtained during 1937 and the lack of large orders at this time necessitates the laying off of many faithful workers until other orders can be secured. The company believes that the business hold-up is entirely due to uncertainty and lack of confidence in the government.

Int'l Paper & Power Reports $9,134,701 Net

This Compares With $5,020,579 For Year 1936—Gross Sales, Less Deductions, Amounted To $123,487,150, An Increase Of 9.1 Per Cent As Compared With Preceeding Year — Reductions In Expenses Are Effected.

Richard J. Cullen, president of the International Paper and Power Company, in making his annual report to stockholders says in part:—

Consolidated net profit of your Company and its subsidiaries for the year 1937 amounted to $9,134,701 compared with $5,020,579 for the year 1936.

Gross sales, less returns, allowances and discounts, amounted to $123,487,150 an increase of 9.1 per cent as compared with 1936. Labor and material costs increased 7.2 per cent but reductions were effected in delivery costs and in selling, general and administrative expense. The substantial increase in maintenance and repairs reflects the program of plant improvement now largely completed.

On December 10, 1937, $2,312,240 was paid in dividends at the rate of $2.50 a share on the Company's cumulative convertible 5 per cent stock. Of this payment $1.25 a share represented the dividend for the fourth quarter of the year and the balance was on account of cumulative dividends accrued since January 1, 1937. In view of the uncertainties of the current business situation the directors did not feel justified in paying dividends for the first quarter of 1938.

Financial Position

Net funded debt of $89,558,390 at December 31, 1937, was $8,828,094 above the corresponding figure at the end of 1936. The increase reflects new borrowing in connection with property construction and acquisition less reductions through sinking fund operations and serial maturities.

International Paper Company has borrowed $6,000,000 from banks and advanced an equal amount to Southern Kraft Corporation for construction of the latter's Georgetown (S. C.) mill. This loan is represented by notes due December 31, 1941, with a sinking fund (based partly on consolidated earnings) to retire at least $3,000,000 and up to $5,400,000 prior to maturity.

The interest rate is 4¼ per cent and in addition a commitment fee of $60,000 was paid to the banks. International Paper Company will be entitled to a reduction in such interest at the rate of 1¼ per cent a year from the date of each note on any portion of the principal prepaid in 1938, ¾ per cent a year on any portion prepaid in 1939 and ½ per cent a year on any portion prepaid in 1940.

In November, 1937, International Paper Company made arrangements for borrowing from banks an additional $10,000,000 to be advanced from time to time to Southern Kraft Corporation as required for its new mill now under construction at Springhill, Louisiana. Borrowings under this bank credit are represented by 4¼ per cent notes due December 31, 1940, with a sinking fund (based partly on consolidated earnings) to pay off at least $4,000,000 and up to $6,000,000 prior to maturity. A commitment fee of $150,000 was paid to the banks. At December 31, 1937, International Paper Company had borrowed $5,100,000 under this arrangement and had advanced $3,506,000 to Southern Kraft Corporation. To April 1, 1938, International Paper Company had borrowed an additional $4,600,000 and had made further advances to Southern Kraft Corporation of $4,400,000.

Southern Kraft Corporation has given mortgages on its Georgetown and Springhill mills to secure the advances it has received from International Paper Company. As security for the advances to it, International Paper Company has given to the lending banks (1) assignments of the mortgages so received and of the indebtedness of Southern Kraft Corporation secured thereby, (2) assignments of the agreements relating to such advances and (3) a pledge of $12,500,000 of First Mortgage Bonds of New Brunswick International Paper Company. Certain other indebtedness of Southern Kraft Corporation to International Paper Company is subordinated to the indebtedness of Southern Kraft Corporation included in the security given to the lending banks.

Of the $11,100,000 borrowed at December 31, 1937, $1,461,026 (being the amount to be retired by operation of the respective sinking funds during 1938) was carried as a current liability and the balance was carried as funded debt.

During 1937 Southern Kraft Corporation made four issues of serial purchase money mortgage notes aggregating $2,784,500 in connection with the acquisition of three jute board mills and various timberlands in the south. Of the total amount $600,000 are non-interest bearing and the balance carry interest at 4 per cent. The unpaid serial maturities run from July 1, 1938, to January 1, 1944. In February, 1938, Southern Kraft Corporation issued an additional $999,000 of 4 per cent purchase money mortgage notes due serially to March 1, 1944, in connection with the acquisition of a fourth jute board mill.

Net working capital of $36,005,232 was $755,481 more than the corresponding figure at December 31, 1936. Consolidated current assets at the end of 1937 amounted to $50,518,106 and current liabilities to $14,512,874.

Change in Capitalization

The Plan for Change in Capitalization dated May 15, 1937, which was approved by the shareholders at the annual meeting last June and by the Directors last August, became effective September 17, 1937.

In December, 1937, Continental Paper and Bag Corporation was discharged from bankruptcy and dissolved. Reserves set up by International Paper Company prior to January 1, 1937, were more than sufficient to cover the losses it incurred in 1937 in connection with this liquidation.

Operations

The pulp and paper industry of North America

during 1937 established a new high record in total production. During the first five months of the year, operations of the industry as a whole averaged over 90 per cent of capacity. This unusual activity was followed by normal seasonal slackening during the summer months and then by drastic recession in the fourth quarter. In December, operations of the industry as a whole averaged not more than 60 per cent of capacity.

During the early part of the year some consumers and converters of pulp and paper had to supplement their established sources of supply by purchases in the spot markets at substantial premiums. To the full limit of its existing facilities, International Paper Company and its subsidiaries met the requirements of their customers both for pulp and for paper at their regularly announced prices, which for most grades had been advanced moderately above 1936 levels.

International Paper Company's price for newsprint delivered in New York was raised to $50 a ton effective January 1, 1938. This compares with a price of $42.50 a ton throughout 1937. The price for rayon grade sulphite pulp was also raised effective January 1, 1938. In both cases, prices for the full year 1937 had been fixed by contract at relatively low levels. Prices for most other grades are generally above the levels of the first quarter of 1937 but below that year's peaks.

During 1937 production by the subsidiary companies was again at record levels with total output of 2,115,860 tons as against 1,937,025 tons in 1936. The figures by grades compare as follows:

	1937	1936
Newsprint	830,836	755,406
Ground wood specialty papers	179,053	152,416
Book and bond papers	134,231	125,470
Southern kraft paper and board	650,030	580,188
Pulp for sale	218,582	201,259
Tissue and wrapping papers	33,010	42,573
Bags	70,118	79,713
Total	2,115,860	1,937,025

Southern Kraft Corporation's Georgetown (S. C.) mill started producing pulp in June, 1937, and in August, 1937, the entire mill was in operation. The total construction cost through December 31, 1937, was $7,087,000 and the capacity approximately 200,000 tons of kraft board a year.

In June, 1937, ground was broken for Southern Kraft Corporation's new Springhill (La.) kraft mill which will be ready for operation with an initial annual capacity of 220,000 tons of kraft board by June 30, 1938. Whether the board mill actually starts operation on that date will depend on the volume of business available at that time. At the same site the Corporation is installing a bleached sulphate (kraft) pulp mill which will have a yearly capacity of 45,000 tons. The construction cost of the whole Springhill mill is estimated at $10,000,000, of which $3,834,000 had been spent at December 31, 1937, and an additional $4,261,000 at April 1, 1938.

The program for bringing all operating mills into an efficient, competitive condition is now largely completed. Additions and improvements (less sales and retirements) amounting to $7,181,137 were made to other properties during 1937, including complete new equipment for production of 20,000 tons yearly of book grade unbleached sulphite pulp at the Gatineau newsprint mill, additional groundwood capacity at the Gatineau and Three Rivers newsprint mills, changing over the Hawkesbury sulphite pulp mill for production of rayon grades instead of book grades, additional grinders and a new steam turbine at the Otis ground wood specialty mill and a sulphite pulp bleaching plant and new power equipment at the Hudson River ground wood specialty mill.

Damage to Chinese Paper Mills

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 20, 1938—An interesting report has just been received by the Department of Commerce from the American Commercial Attache at Shanghai giving a detailed report of the damage done to paper mills in China during the present war. Details are as follows:

Pao Shan Paper Mill, Chapei, Shanghai. Office building destroyed by gun fire. One boiler damaged through fall of chimney. Machinery said intact.

Imperial Paper Mill, Lunghwa, Shanghai. The wet end of one machine was bombed at the beginning of hostilities. All machinery was moved to Hankow before the fall of Nantao to Japanese. Understand they have no intention of having the machinery erected at Hankow.

Great China Paper Mill, Woosung, near Shanghai. Mill completely destroyed by gun fire.

Tien Chang Paper Mill, Pootung, Shanghai. Mill now in the hands of Japanese who turned it into a Japanese headquarters.

Tien Chang Paper Mill, Yangtsepoo, Shanghai. Mill not operating for past year and half. Now in the hands of Japanese.

Kincheng Paper Mill, Shanghai. Mill operating half time as demand for strawboard small.

Kiangnan Paper Mill, Chapei, Shanghai. Partly destroyed.

Shanghai Paper Mill, Chapei, Shanghai. Completely destroyed.

Ming Foong Paper Mill, Kashing, Chekiang Province. Destroyed.

Wha Foong Paper Mill, Hangchow, Chekiang Province. Destroyed.

Wah Cheng Paper Mill, Soochow, Kiangsu Province. (60 miles from Shanghai.) No news but in Japanese hands.

China Fibre Container Co., Yangtsepoo. (American.) Operating.

Ching Wah Strawboard Mill, Tientsin, North China. No news.

Wah Shing Paper Mill, Tsinanfu, Shantung Province. No news.

Sun Kee Paper Mill, Nantao, Shanghai. Not destroyed.

Inspects Northwest Pulp Mills

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., April 16, 1938—Sir Herbert Gepp, managing director, Australian Paper Manufacturers Ltd. spent some time in Vancouver recently after a tour of inspection of Pacific Northwest pulp and paper mills. On completion of his investigation of the industry in B. C. he will visit plants in the East. The purpose of his trip is to study methods used on this continent in relation to plans for development of a large scale pulp and paper industry in Australia. He stated the current newspaper consumption of Australia was around 130,000 tons annually, this being mainly imported from Canada and Great Britain.

Quebec Prohibits Export of Anticosti Timber

Projected Sale of Pulp Wood Resources of Anticosti Island Terminated as Premier Duplessis States No Export of Wood Will Be Permitted to Foreign Countries — Newsprint Mill For Australia—Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 18, 1938—The projected deal by which German interests would acquire the pulpwood resources of the Island of Anticosti has collapsed, the *coup de grace* being given by Premier Duplessis, who has announced that no export of wood will be permitted to foreign lands from the island. There was an interview on the subject during the past week between representatives of the Consolidated Paper Corporation, the owners of the island and Premier Duplessis. The letter told the representatives (L. J. Belnap, president, and Francois Faure, vice-president) of the Government's decision, and the company accepted the situation. The interview is said to have been of a friendly nature, and there is no break in the friendly relations which the Government wishes to establish and maintain with the pulp and paper companies operating in the province with a view to improving the pulp and paper situation.

German and Dutch Capitalists Interested

It was early in December last year that the news was published that a syndicate of German and Dutch capitalists sought to acquire the Island of Anticosti to develop its valuable forest resources.

It was proposed to build a sulphite pulp mill with an annual capacity of some 200,000 tons, affording employment to some 1,500 to 2,000 men. Negotiations were carried on through a third party, a local financier, to whom, it was reported, Consolidated Paper Company had given an option on the property early last summer.

The island was surveyed by a group of outstanding German engineers, forestry experts and accountants, on behalf of the syndicate.

At the time, Premier Duplessis pointed out there could be no transfer of timber limits, even though the property was freehold, without the consent of the Minister of Lands and Forests. Nothing had come before the Government, he said, in connection with Anticosti Island.

Later a spokesman for the inspecting experts denied there was any intention to purchase the island outright. It might be found desirable, after study, he said, to purchase its wood or pulp. He admitted he had seen the local financier, but insisted it was not with a view to purchase. The study commission sailed without disclosing any definite information as to the result of negotiations, but it was believed nothing would be decided until after a report had been made to the principals in Berlin and Amsterdam.

Newsprint Mill for Australia

A dispatch from Sydney, Australia, says: "Leading metropolitan newspapers in Australia have decided to form a company to manufacture their own newsprint and have petitioned the Government to pay a bounty of £4 (Australian—$16.04) per ton on an estimated production of 27,000 tons of newsprint, it was learned today.

"Sir Keith Murdock, who made the application on behalf of the company, the Australian Newsprint Mills Proprietary Limited, suggested that the bounty might be met by the imposition of a duty on imported newsprint sufficient, but not more than sufficient, to recoup the Commonwealth Treasury.

"Erection of a mill to cost $4,010,000 is to be started at once at Hobart, Tasmania.

"Only one unit of the mill, capable of producing 27,000 tons of newsprint annually, will be operated at first. Later, it is hoped to speed up production to 100,000 tons per year. Australia's newsprint consumption at present amounts to 150,000 tons per year."

Sag in Paper Industry Affects Engineering Co.

At the annual meeting of Dominion Engineering Works Limited the president, W. F. Angus, stated that business has declined since the beginning of the present year owing to the recession in the paper industry, but the company was now feeling the benefit of diversifying its products. He added:

"Owing to financial difficulties encountered by one of our customers, the Lake Sulphite Pulp Company, we have been compelled to stop work on their orders for machinery. It is to be hoped that before long some scheme of re-financing will be put through which will enable us to complete these orders. Under our contract with this customer our interests are fully protected."

The year's financial statement which showed a consolidated operating profit of $459,435, as compared with $107,849 for the preceding period, and a net profit, after all charges, including income tax reserves, of $144,925, against a 1936 deficit of $26,259, was unanimously adopted.

Newsprint Production Decreases

Production of newsprint in Canada during March 1938 amounted to 224,604 tons and shipments to 182,687 tons. Production in the United States was 67,864 tons and shipments 66,138 tons, making a total United States and Canadian newsprint production of 292,468 tons and shipments of 248,825 tons. During March, 25,354 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 317,822 tons. Total production in March 1937 was 415,454 tons.

The Canadian mills produced 218,616 tons less in the first three months of 1938 than in the first three months of 1937, which was a decrease of twenty-five and two tenths percent. The output in the United States was 32,275 tons or thirteen and eight tenths percent less than in the first three months of 1937, in Newfoundland 17,092 tons of nineteen and five tenths percent less, making a total decrease of 267,983 tons, or twenty-two and five tenths percent.

Stocks of newsprint paper at the end of March were reported at 188,006 tons for Canadian mills and 26,527 tons for United States mills, making a combined total of 214,533 tons compared with 170,890 tons on February 28, 1938. Considerable tonnage was accumulated at points from which water shipments will be made upon the opening of navigation.

Kimberly-Clark Workers In Safety Campaign

Employees of Mill at Kimberly, Wis. Start Six Months' Contest to Reduce Accidents in All Departments—Hear Application for Independent Union—Reversed Decision in Mrs. Snell Estate—Other Late Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 18, 1938.—In their never ending drive to maintain safety, employes of the Kimberly-Clark Corporation's mill at Kimberly, Wis., started another six months' safety campaign to terminate October 1.

Each of the departments will be designated by color in a contest starting with 1,000 points each. Deductions are to be made on the basis of 100 points for each on-duty lost time accident; 50 points for each off-duty lost time accident; 25 points for each on-duty accident requiring the attention of a doctor, and 15 points similarly for off-duty accidents. One point will also be deducted for each day an employe is off duty because of any kind of accident.

Safety programs are to be put on the last Wednesday of each month, with each department as a sponsor for one of them. Five dollars will be allowed for expenses towards the program. Prizes will be given at each meeting to five persons attending, but those having an accident score will be barred. A "true or false" list of statements will be issued each month on safety, and the largest number of correct answers will draw a prize. Fifty points will be given for the best program of the series, and a dinner will be given workers in the department having the highest number of points at the close of the contest.

Hear Application For Independent Union

A hearing was conducted last week at Appleton, Wis., by Alvin Handrich, examiner for the Wisconsin Labor Relations board on the application of the Employes Asociation of the Appleton Coated Paper Company for listing as an independent union. Attorney Burton R. Manser appeared on behalf of the employes. The American Federation of Labor was represented by Attorney I. E. Goldbeck of Milwaukee, Wis. Officers of the employes association gave testimony relative to the formation of the independent union, but Mr. Goldbeck claimed the group had been influenced by company officials and therefore should be denied listing.

Decision in Favor of John Strange Co.

In a ruling issued last week, The Wisconsin Supreme Court reversed a decision of Circuit Judge Fred Beglinger of Oshkosh, Wis., in a suit granting a judgment of $1,778 from the John Strange Paper Company, Menasha, Wis., to Miss Ruth Lansing of Neenah, Wis. The defendant brought suit for $9,190 for injuries suffered in an automobile accident. She contended steam from the Strange mill had made the pavement icy, causing her car to skid and collide with a truck. The company contended the jury's verdict rested completely on conjecture. The Supreme Court found for the company, and the damages will not have to be paid.

Fox River Co. Acquires Patten Paper Co.

The Fox River Paper Company, Appleton, Wis., has taken over the property of the Patten Paper Company, Ltd., Appleton, which it purchased at a sheriff's sale recently. No manufacturing operations are contemplated in the mills, but a portion of the space will be used for storage. Approximately 50,000 feet of floor space is to be rented out to industries or for storage.

Awards Made For Safe Truck Driving

Eleven truck drivers of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., have been given awards by the Hartford Accident and Indemnity Company for safe driving. Ten of them have two-year records without accidents. The awards were made at a meeting at the Elks club, in charge of James J. Plzak, claims manager for the company. Earl F. Otto made the presentations.

Reversed Decision in Mrs. Snell Estate

The Wisconsin Supreme Court has reversed the decision of Judge D. E. McDonald, of the probate court at Oshkosh, Wis., relative to the settlement of legacies out of the estate of Mrs. Mary Felker Snell, who owned $275,000 worth of stocks, largely in the Gilbert Paper Company, Menasha, Wis.

Albert C. Gilbert, president of the Gilbert Paper Company, and the decedent's husband, Arthur B. Snell, are executors of the estate, and sought an interpretation of the terms of the will, which made cash bequests to friends and relatives amounting to $17,500, and called for building up a trust fund of $50,000 for two children of Mrs. Snell's sister, Sarah Felker Gresham. As the will was interpreted in court, the trust fund was to be built up from dividends on stocks, after which the stocks were to go to Mr. Gilbert. Mr. Snell was awarded a legacy of $4,000 a year. Judge McDonald ruled the cash legacies of $17,500 must be paid first, but the executors appealed the ruling to the Supreme Court, contending the cash bequests and the rust fund should be considered jointly as part of the estate. The supreme court sustained the executors.

Retires After 43 Years of Continuous Service

The Consolidated Water Power and Paper Company's oldest employe retired April 1. He is Chris Oleson, who at 78 years of age, had a record of 43 years of continuous service with the company, largely in the capacity of mechanic at the company's mill at Biron, Wis. Except for time out when he had a broken wrist, Oleson had never missed a day's work nor was tardy. Sickness was unknown to him until this last year, when he contracted rheumatism. He started work in 1895 for the old Grand Rapids Pulp and Paper Company, tearing down an old sawmill up the Wisconsin River owned by Francis Biron. He was a steady employe from that time on for the company and its successor. Mr. Oleson intends to spend much of his time at his son's 160-acre farm. Mr. and Mrs. Oleson have seven children and ten grandchildren.

Trend of Chicago Paper Industry Upward

Broader Demand for Many Grades of Paper Creates Better Tone in Midwest Market—Salesmens Association Meet — First Shipment From Ontario Paper Co's New Mill—Safety Conference Meets—Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 18, 1938—With the exception of the still somewhat demoralized waste paper market, the Chicago paper industry gave a fairly good account of itself during the week. Sulphite bond prices continued to hold at the lower figure but with demand reported favorable. There is some comment concerning new color differentials with news on this subject expected shortly. The book market is strengthened at present levels and demand is reported to be broadening out. Covers remain about the same. Groundwoods have indicated some improvement in demand with basic conditions favorable. Newsprint markets are virtually unchanged. Kraft paper executives in this vicinity expect improvement in the near future and all local markets looking to retail replenishment are pleased over the turn in the weather which has provided a very fair pre-Easter retail trade. Board papers are in fair demand at the present time. There are persistent reports that within the next few weeks the paper industry will be in a favorable position to renew upward advances.

Midwest Salesmens Association Meet

The midwest division of the Salesmens Association of the Paper Industry held one of its most successful meetings on Monday, April 11, at the Hotel Sherman with Dr. A. A. Haake, executive director of the National Furniture Manufacturers Association, as the speaker. Dr. Haake interested a record group of salesmen and guests with an account of the recent conference of small business men in Washington. Dr. Haake feels that small business, while seemingly far from united, does have about three major objectives which have been transmitted to the Government. The first is a marked reduction in taxes, the second is less stringent regulation and the third is a definite charting of the administration course to permit specific planning ahead on the part of private business concerns. The salesmen present found Dr. Haake's remarks interesting and enlightening, particularly inasmuch as the veteran trade association executive is convinced that the only solution to our present position can come through an elimination of petty jealousies and through strong coordination of business interests.

Zellerbach Line of Envelope Enclosures

The Zellerbach Paper Company has recently issued a bulletin to the local trade with respect to "Star Performers" and recounting the effectiveness of properly developed envelope enclosures as a factor in sound merchandising. The message itself is printed on Dependable Offset, Canvas Finish — 25 x 38 — 160M. Dependable Offset comes in a wide variety of fancy finishes.

Midwest Safety Conference May 17-19

The Greater Chicago Safety Council will hold its sixteenth annual Midwest Safety Conference on May 17, 18 and 19 at the Sherman Hotel. The event, featuring a thorough discussion of accident prevention methods, always attracts a considerable number of executives in paper industries identified with safety work. At least four sessions are reported to be of unusual interest to these men, particularly those devoted to engineering fundamentals and their relation to industrial safety on the afternoon of May 17 and the full discussion of occupational diseases and the elimination and control of health hazards of common industrial processes slated for the afternoon of May 18. On May 19, sessions will be held on industrial sanitation and hygiene as well as on training in industrial safety.

First Shipment From Ontario Paper Co.

The steamship Mathewston arrived in Chicago the latter part of this week bearing 3,809 tons of newsprint for the Chicago Tribune, sent from the mill of the Ontario Paper Company at Thorold, Ontario. The shipment is the first received this year from the Canadian mill and will be followed by five other cargoes, total shipment to be 13,780 tons. All the boats, with the exception of one, will carry cargoes of corn on the return trip as an additional evidence of the importance of lake shipping to Chicago concerns.

Power Industry Conference Attracts Interest

Chicago was the center this week of the power industry with the Midwest Power Conference at the LaSalle Hotel attracting most of the attention. The purpose of the Conference is to provide an opportunity for an interchange of ideas on power production, transmission and consumption. Included among the list of speakers were several executives connected with concerns supplying the paper industry. Among the speakers and their subjects were W. E. Blowney, General Electric Company, "Some Trends in Turbine Design"; O. K. Marti, Allis-Chalmers Co., "Electronic Switching Equipment"; M. J. Zucrow, consulting engineer, "Measurement of the Flow of Fluids in Pipes"; F. R. Benton and J. P. Magos, Crane Company, "Steam Erosion of Ferrous and Non-ferrous Metals"; James D. Cunningham, Republic Flow Meters Company and Dr. Philip Fox of the Museum of Science and Industry. Additional information and copies of paper delivered at the Conference may be obtained from S. E. Winston, conference secretary, Armour Institute of Technology, 3300 Federal Street, Chicago.

Buys Kant Leek Paper Dish

MENASHA, Wis., April 13, 1938—The Menasha Products Company, Division of the Marathon Paper Mills Company, of this place, announce the purchase of the physical assets and good will of F. M. Longnecker, of Delta, Ohio, manufacturer of the Kant Leek Paper Dish.

Financial News of Pulp and Paper Industry

Holyoke Paper Companies File Statements of Conditions With Commission of Corporations—Westinghouse Business Expands — Collins Reorganization Completed—Dr. F. H. Reichel Elected Head of Sylvania Corp.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending April 20, 1938

	High	Low	Last
Armstrong Cork Co.	31¾	28⅝	29
Celotex Corp.	19	18⅜	18⅜
Celotex Corp., pf.	54	52½	54
Certain-Teed Products Corp.	7⅜	6¼	6½
Certain-Teed Products Corp., pf.	28½	24	25
Champion Paper & Fibre Co.	20½	19½	19½
Congoleum-Nairn Co.	21¼	18⅜	19¼
Container Corp. of America	13	11⅞	12⅜
Continental-Diamond Fibre Co.	7⅞	7⅜	7⅜
Crown-Zellerbach Co.	10½	9¼	9¼
Flintkote Co.	16¾	14⅝	15⅜
Robert Gair	3⅞	3¼	3¼
Robert Gair, pf.	13	11¼	11¼
International Paper & Power	7⅝	5¾	6⅞
International Paper & Power, pf.	29½	24	26¾
Johns-Manville Corp.	70½	64½	66
Johns-Manville Corp., pf.	125½	125	125
Kimberly-Clark Corp.	22½	22½	22½
Masonite Corp.	32¾	31	31
Mead Corp.	12	10	10
Mead Corp., pf.	57¼	56⅛	56⅛
Paraffine Companies, Inc.	37	35	37
Paraffine Companies, Inc., pf.	90½	90⅛	90⅛
Ruberoid Co.	19½	18½	18½
Scott Paper Co.	38	37	38
Sutherland Paper Co.	21¾	21½	21¾
Union Bag & Paper Corp.	11	10	10
United Paperboard Co.	4½	4⅜	4⅜
U. S. Gypsum Co.	73½	67	68
U. S. Gypsum Co., pf.	164	162¼	164

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending April 20, 1938

	High	Low	Last
American Box Board Co.	8	7¾	8
Brown Co., pf.	22	21⅞	22
Great Northern Paper	26¾	25½	25½
St. Regis Paper Co.	3½	2¾	2¾
Taggart Corp.	4¼	3⅞	3⅞

Holyoke Paper Firms File Statements

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., April 18, 1938—Statements of conditions for the following local paper concerns have been filed with the commission of corporations of Boston as follows:—

Valley Paper Company of Holyoke. Assets—Cash $2858, accounts receivable $106,308, notes receivable from customers $2939, merchandise $263,625, supplies $7216, securities $79,637, real estate $171,432, machinery $131,843, treasury stock $11,300. Liabilities—Accounts payable $66,663, reserves $29,115, capital stock $200,000, surplus $481,382.

Perfect Safety Paper Company of Holyoke, Mass. Assets—Cash $12,547, accounts receivable from customers $25,173, notes receivable from customers $5534, merchandise $8452, supplies $14,516, real estate $62,549, machinery $23,119, prepaid insurance $993, good will $100,000. Liabilities—Accounts payable $13,144, mortgages $19,000, capital stock $160,000, surplus $60,742.

Morart Paper Company, Inc., of Holyoke. Assets—Cash $9119, accounts receivable from customers $11,215, accounts receivable from others $2009, merchandise $12,121; supplies $557, life insurance $2344, machinery $24,425, motor vehicles $546, furniture and fixtures $1119. Liabilities—Accounts payable $4907, notes and acceptances payable $30,111, capital stock $28,439.

Westinghouse Business Improving

Although bookings during the first quarter of 1938 were 49 per cent less than during the first quarter of 1937, March business showed an increase of nearly $4,000,000 over February, it was reported at the recent annual meeting of stockholders of the Westinghouse Electric and Manufacturing Company.

Bookings (incoming orders) for the first three months of the year totaled $37,998,569. During the same period of 1937 they were $74,242,584. March 1938 bookings were $15,126,588; February bookings were $11,439,127.

A. W. Robertson, chairman of the board, in a brief talk to stockholders pointed out that the company is making profits in spite of general adverse business conditions.

"I believe that unless things get much worse than we are accustomed to expect in America," he said, "we will come through without too much difficulty. There are substantial orders on the books. This month we will pay back five million dollars of the money we borrowed last year to help us meet the enormous rush of business and very soon we expect to pay off the balance, which will leave the company out of debt—the way we like to be. Orders were good in March, and so far in April the improvement continues."

On March 31, 1938, unfilled orders amount to $53,651,814 as compared with $60,298,087 on January 1.

Five directors were elected at the meeting. Succeeding themselves were directors Jerome J. Hanauer, W. L. Mellon, Frank A. Merrick, and George M. Verity; the new member elected was C. W. Pomeroy, of New York, secretary of the company.

Collins Completes Reorganization

[FROM OUR REGULAR CORRESPONDENT]

NORTH WILBRAHAM, Mass., April 18, 1938—Reorganization under 77B has been completed in the case of the Collins Manufacturing company of this town, according to announcement of the officials of the company and the Federal court has withdrawn from further supervision. The arrangements were completed in the surprisingly short time of two months. The formal release from the court came on March 30.

Dr. F. H. Reichel Heads Sylvania Corp.

Dr. F. H. Reichel, heretofore vice-president in charge of production of the Sylvania Industrial Corporation, New York, N. Y., manufacturer of transparent wrapping materials, with mill at Fredricksburg, Va., has been elected president of the company, succeeding Dr. Roger N. Wallach, who will become chairman of the board of directors.

Dr. Reichel will continue in charge of manufacturing operations in his new capacity, with complete supervision of mills.

Lake States TAPPI Discusses European Practice in Bleaching

The April meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry was held at the Conway Hotel, Tuesday, April 12, with Thomas W. Toovey, Technical Representative of the Pennsylvania Salt Manufacturing Company as the speaker. Mr. Toovey presented a comprehensive picture of European practice in bleaching sulfite and sulfate pulps for paper production and for rayon. In general, European practice is similar to methods in use in this country, although there are several interesting recent designs in chlorinating and hypochlorite bleaching equipment. Continuous chlorination, alkali treatment, washing and hypochlorite bleaching are used to a large extent. In the production of high alpha pulps for rayon, batch processes are used to a greater extent. A lively discussion followed the presentation of the paper.

Those in Attendance

Those who attended the meeting were as follows:

F. L. Aldrich, Interlake Paper Company; Francis Alland and W. J. Auchter, Hoberg Paper Mills, Green Bay, Wis.; R. J. Baker, Wadhams Oil Company, Milwaukee, Wis.; H. P. Baldwin, Consolidated Water Power and Paper Company, Appleton; F. E. Brauns, Institute of Paper Chemistry, Appleton; M. A. Buchanan, Appleton; G. N. Carleton, Detroit Sulfite Pulp and Paper Company, Detroit, Mich.; Louis Cherney, Marathon Paper Mills Company, Menasha, Wis.; R. C. Crain, Nekoosa Edwards Paper Company, Port Edwards, Wis.; A. F. Crossman, The Lindsay Wire Weaving Company, Cleveland, Ohio; R. A. Diehm, Rohm Haas Company, Philadelphia, Pa.; O. F. Doubleday, Wadhams Oil Company, Milwaukee, Wis.; H. A. Du Bois, Kimberly-Clark Company, Neenah, Wis.; Homer Eaton, Bulkley Dunton Pulp Company, New York, N. Y.; Sigge Ekman, Rhinelander Paper Company, Rhinelander, Wis.; G. F. Enderlein, Mosinee Paper Mills Company, Mosinee, Wis.; Geo. B. Estey, Fox River Paper Company, Appleton, Wis.; J. R. Fanselow, Kimberly-Clark Corporation, Neenah, Wis.; P. M. Foster, Williams-Gray Company, Chicago, Ill.; T. W. Fraule, Interlake; C. F. Franzen, Marathon Paper Mills Company, Ashland, Wis.

W. B. Giese and A. L. Gnewuch, Hoberg Paper Mills, Green Bay, Wis.; H. H. Gottsleben, Kimberly-Clark Corporation, Neenah, Wis.; John H. Graff, Institute of Paper Chemistry, Appleton, Wis.; Russel J. Grainer, Milwaukee Steel Foundry Company, Milwaukee, Wis.; J. W. Grimes, Standard Oil Company, Green Bay, Wis.; M. C. Heyer, Hasco Valve and Machine Company, Milwauke, Wis.; Ray N. Hollands, Marathon Paper Mills Company, Menasha, Wis.; W. F. Holzer, Fox River Paper Company, Appleton, Wis.; K. F. Horan, Hoberg Paper Mills, Green Bay, Wis.; Axel Hyttinen, Institute of Paper Chemistry, Appleton, Wis.; Jack Inaes, Rhinelander Paper Company, Rhinelander, Wis.; I. H. Isenberg, Institute of Paper Chemistry, Appleton, Wis.; E. C. Jacobi, A. E. Broughton and Company, Green Bay, Wis.; F. W. Johnson, Rhinelander Paper Company, Rhinelander, Wis.; W. O. Johnson, Hoberg Paper Mills, Green Bay, Wis.; Grover Keeth, Marathon Paper Mills Company, Rothschild, Wis.; M. J. Ketter, Hoberg Paper Mills, Green Bay, Wis.; R. G. Knechtges, Northern Paper Mills, Green Bay, Wis.

C. M. Koon, Institute of Paper Chemistry, Appleton, Wis.; Frank Kreiling, Thilmany Pulp and Paper Company, Kaukauna, Wis.; Otto Kress, Institute of Paper Chemistry, Appleton, Wis.; Stephen Kukolich, Neenah Paper Company, Neenah, Wis.; Lloyd Lang, Kimberly-Clark Corporation, Neenah, Wis.; R. J. Le Roux, Consolidated Water Power and Paper Company, Appleton, Wis.; John O. Logan, Mathieson Alkali Works, Chicago, Ill.; W. M. McGraw, General Electric Company, Milwaukee, Wis.; C. J. McMahon, Appleton Woolen Mills, Appleton, Wis.; N. L. Malcove, Northern Paper Mills, Green Bay, Wis.; Jos. Marchant, Hoberg Paper Company, Green Bay, Wis.; E. B. Miller, Foxboro Company, Milwaukee, Wis.; E. P. Miller, Hoberg Paper Mills, Green Bay, Wis.; H. A. Moffat, Industrial Chemical Sales, Chicago, Ill.; C. R. Morse, the Wisconsin River Paper and Pulp Company, Steven's Point, Wis.; L. A. Moss, Whiting-Plover Paper Company, Steven's Point, Wis.; Harley E. Nelson, Nekoosa Edwards Paper Company, Port Edwards, Wis.; Howard Morgan, Institute of Paper Chemistry, Appleton, Wis.

R. A. Nugent, and N. H. Christian, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; C. H. Nystrom, Northern Paper Mills, Green Bay, Wis.; T. A. Pascoe, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; L. B. Penhallow, Wadhams Oil Company, Milwaukee, Wis.; G. A. Petroe, Mathieson Alkali Works, Chicago, Ill.; Don Porter, Kimberly-Clark Corporation, Neenah, Wis.; W. B. Pusey, Valley Iron Works, Appleton, Wis.; R. M. Radsch, Appleton, Wis.; Robert L. Rapp and J. B. Roskams, Hoberg Paper Mills, Green Bay, Wis.; John R. Sanson, Badger Paper Mills, Peshtigo, Wis.; N. A. Schauer, Hasco Valve and Machine Company, Chicago, Ill.; R. L. Shaw, W. A. Jones Foundry and Machine Co., Appleton, Wis.; Howard Sheldon, Hoberg Paper Mills, Green Bay, Wis.; Harry Sorman, Central Paper Company, Muskegon, Mich.; J. A. Staidl, Thilmany Pulp and Paper Company, Kaukauna, Wis.; B. F. Smith, Kimberly-Clark Corporation, Neenah, Wis.; Rolland Smith, Stein-Hall Manufacturing Company, Chicago, Ill.; W. O. Smyth, Smith Steel Foundry Co., Milwaukee, Wis.; W. H. Swanson, Kimberly-Clark Corporation, Neenah, Wis.

Edwin Timmerman, Northern Paper Mills, Green Bay, Wis.; Thomas W. Toovey, Pennsylvania Salt Manufacturing Company, Philadelphia, Pa.; R. D. Totten, Ciba Company, Charlotte, N. C.; J. A. Van den Akker, Institute of Paper Chemistry, Appleton, Wis.; Martin Van De Laarschot, Hoberg Paper Mills, Green Bay, Wis.; R. W. Van Kirk, Penick and Ford, Cedar Rapids, Iowa; Edward H. Voigtman, Kimberly-Clark Corporation, Neenah, Wis.; James E. Watson, Wisconsin Wire Works, Appleton, Wis.; W. E. Waymire, Westinghouse Electric and Manufacturing Company, Appleton, Wis.; Jos. Wedgwood, Manhattan Rubber Company, Neenah, Wis.; John

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Weidner, Institute of Paper Chemistry, Appleton, Wis.; L. E. Wellman, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; C. J. West, Institute of Paper Chemistry, Appleton, Wis.; Earl R. Williams, Neenah Paper Company, Neenah, Wis.; N. F. Wilmot, Mathieson Alkali Works, Chicago, Ill.; Harold Woehler, Fox River Paper Company, Appleton, Wis.; J. C. Wollwage, Institute of Paper Chemistry, Appleton, Wis.; R. L. Youngson, Marathon Paper Mills Company, Rothschild, Wis.

TAPPI Kalamazoo Section Discusses Printing Ink Developments

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry, met Thursday evening, April 7, at the Park American Hotel in Kalamazoo. Chairman Paul DeGuehery appointed three committees:

Committee on Water: M. S. Fogerty, Chairman, Michigan Paper Company; H. C. Bradford, Rex Paper Company; W. F. Hathaway, Kalamazoo Vegetable Parchment Company.

Committee on Relative Humidity: Carl C. Schneider, Chairman, Hawthorne Paper Company; Merle Wilkins, Bryant Paper Company; Ralph Irwin, Hercules Powder Company; Elbert Milham, Watervliet Paper Company; W. J. White, Kalamazoo Vegetable Parchment Company; Prof. D. W. McCready, University of Michigan.

Committee on Arrangements: Robert Buss, Chairman, Hercules Powder Company; John E. Bauman, Kalamazoo Vegetable Parchment Company.

Following the business session, Merton S. Fogerty, of the Michigan Paper Company, briefly described and explained the operation of the Vortrap.

Fred Weymouth Speaks

The main speaker of the evening was Fred Weymouth of the International Printing Ink Corporation who spoke on "Recent Printing Ink Developments and High Speed Inks," dealing with high speed inks, gloss, and Vaporin. He said most of the recent changes in ink have been in the vehicle. Oil varnishes are too slow and have been replaced by synthetic binders used with various solvents. Vaporin ink is used very largely by publishers for blacks and half-tones. Gloss inks were first used on coffee bags and on kraft containers. They work best on a hard sheet, with high finish and high pick test. Coated papers have been more satisfactory than uncoated supered stock. This ink is now being used extensively for labels. The factors in obtaining a good gloss are (1) Make ink dry excessively fast, (2) Use of viscous vehicle, (3) Print on non-absorbent surface. An interesting discussion followed Mr. Weymouth's address.

The next meeting will be on May 5.

Those in Attendance

Those attending were: M. S. Fogerty, Paul DeGuehery, Ray L. Barton, W. H. Astle and A. E. Hays, Michigan Paper Company; P. W. Bartholomew, Fred L. Chappell, L. N. Cooke, Paul Easton, W. J. Higbie, Robert Buss and H. Ware, Hercules Powder Company; E. E. Ludwig and Robert L. Byrne, Bermingham & Prosser; Leo A. Willoughby, V. G. Mathis, R. A. Olson and Merle Wilkins, Bryant Paper Company; Harry C. Bradford, Hod Heath, A. N. Cole and J. G. Reumveld, Rev. Paper Company; N. J. Cervie, E. W. Cowling, H. E. Stafford and C. C. Schneider, Hawthorne Paper Company; Lloyd Higbie, R. H. Hurst, Marshall Rutz, Al Perlick, John Bauman, W. F. Hathaway, H. Boldman, Philip Bixby and Hugh Smith, Kalamazoo Vegetable Parchment Company; T. A. Kangyis and Olin D. Blessing, Dow Chemical Company; L. G. Janett, J. A. Ross Engineering Corporation; Elbert J. Milham, Watervliet Paper Company; Joe Dennany, W. A. Kirkpatrick and H. B. Johnston, Allied Paper Mill; Harris Kindig, Mac Sim Bar Paper Company; W. S. Taylor, American Cyanamid Corporation; Paul J. Thoma, F. Elliott and E. J. Kelly, E. J. Kelly Company; Al Sherwood and J. A. Heenan, Southerland Paper Company; H. S. Faram, Watervliet Paper Company; Arthur Weinland, Lee Paper Company; J. N. Swarr, Bristol Company; Richard Aument, J. Ske and W. R. Tobin, American Box Board Company.

Government Paper Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 20, 1938—The Government Printing Office has announced the following paper awards.

Enterprise Paper Company will furnish 1,500 pounds (45,000 sheets) of 24 x 38 white paraffin paper at 9.56 cents per pound less 2 per cent, bids for which were received on March 16.

R. P. Andrews Paper Company will furnish 1,780 sheets of 20 x 25 gummed paper at $9 per M sheets, bids for which were received on March 21.

Cauthorne Paper Company will furnish 37,400 pounds of white sulphite paper at 6.738 cents per pound, bids for which were received on March 22.

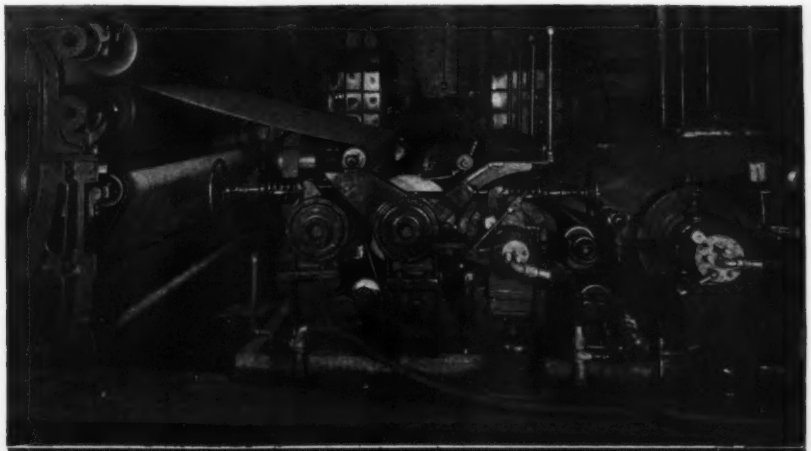
R. P. Andrews Paper Company will furnish 5,000 pounds of rope manila paper in 48 inch rolls at 15.5 cents, bids for which were received on March 23.

James F. Walsh Paper Corporation will furnish 14,167 pounds (55,556 sheets) of 50 per cent rag, 31½ x 48 M. F. lithograph paper at 8.63 cents and Barton, Duer & Koch Paper Company will furnish 28,050 pounds (300,000 sheets) of 32 x 42 white sulphite writing paper at 6.69 cents. Bids for these items were received on March 25.

Barton, Duer & Koch Paper Company will furnish 40,000 pounds in 23¼ and 26⅓ rolls, ivory calendered tag board at 8.5 cents per pound.

The Printing Office has received the following bids for 5,000 pounds (42,000 sheets) of No. 1 kraft paper; Barton, Duer & Koch Paper Company, 5.95 cents; Graham Paper Company, 5.25 cents and Mathers-Lamm Paper Company, 5 cents.

For 1,000 pounds of vegetable parchment paper for tympan use; Whitaker Paper Company, 17.25 cents; Paterson Parchment Company, 28 cents less 2 per cent; Reese & Reese, Inc., 15.6 and 22 cents; R. P. Andrews Paper Company, 27 cents; Mathers-Lamm Paper Company, 15.25 cents; and Barton, Duer & Koch Paper Company, 25 cents.



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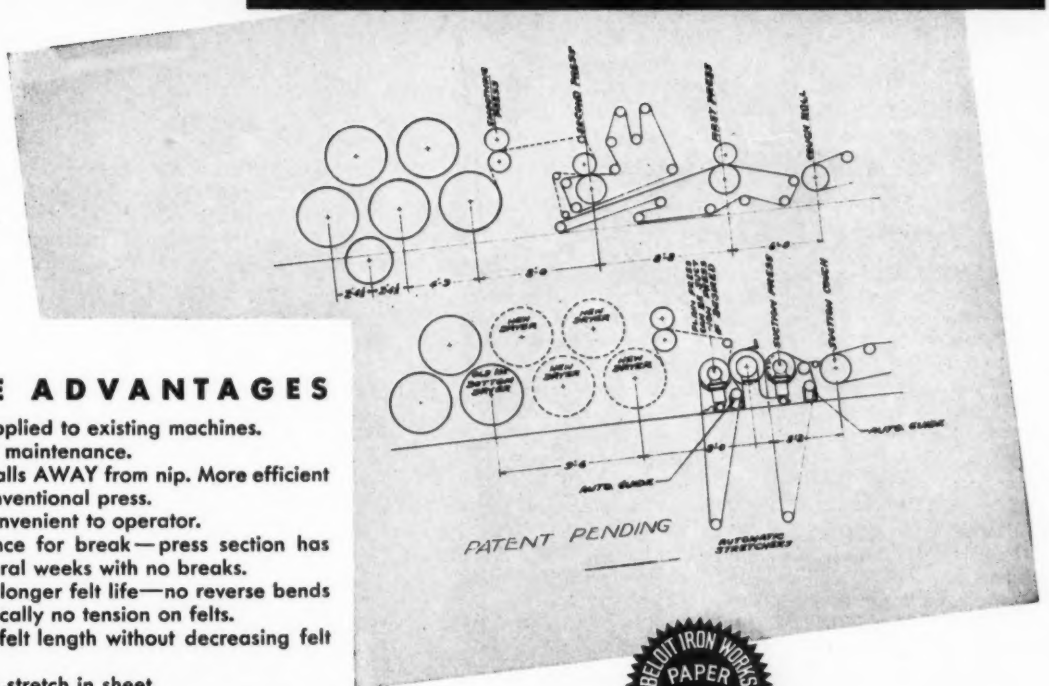

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3 Water falls AWAY from nip. More efficient than conventional press.
4 More convenient to operator.
5 No chance for break—press section has run several weeks with no breaks.
6 Assures longer felt life—no reverse bends—practically no tension on felts.
7 Shorter felt length without decreasing felt life.
8 Reduces stretch in sheet.
9 Unnecessary to carry a large amount of crown.
10 Paper goes to dryers more bone dry.
11 Saves enough space to permit use of more dryers, or to lengthen fourdrinier wire part.
12 Eliminates crushes.
13 Smooths out sheet without need of reverse press.
14 Increases speed and safety.

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TAPPI Delaware Valley Section Discusses Fractionation of Pulps

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineer's Club in Philadelphia, Pa., Friday evening, April 15th. J. d'A. Clark opened the meeting following supper, by presenting two nominating committees headed by Messrs. Clifford Peterson of the Riegel Paper Corporation, and Jacob Edge of the Downingtown Manufacturing Company. In the absence of both of the above members, Mr. Derr and Mr. Bates acted as temporary chairmen.

Mr. Bates nominated for chairman, Mr. J. d'A. Clark; vice-chairman, C. M. Connor; secretary-treasurer, J. R. Atwater; executive committee, B. M. Thomas and S. D. Reynolds.

Mr. Derr nominated for chairman, C. M. Connor; vice-chairman, Dr. G. L. Schwartz; secretary-treasurer, J. R. Atwater; executive committee, J. d'A. Clark and S. D. Reynolds. Mr. Clark announced that the voting would take place through mail, together with the notice of the May meeting. There were no further nominations from the floor.

The next meeting will be held on the second Friday of May, and Mr. E. T. Street of the Downingtown Manufacturing Company will be the speaker of the evening. The Chairman also announced that a number of the members have mentioned a desire to hold their Spring dance in June. Further notice of this affair will be given at the next meeting.

F. W. Brainerd Speaks

Mr. Clark presented Mr. Brainerd of the Scott Paper Company, speaker of the evening, who gave a paper on the "Fractionation of Pulps".

Mr. Brainerd tendered an excellent treatise on the results obtained through the fractionation of pulps in an especially designed classifier, designed by himself and Mr. Clark of the Scott Paper Company. The results of Mr. Brainerd's speech indicated that a tremendous amount of work had gone into the fabrication and perfection of this instrument.

A short history was given of the steps taken in past years to design a proper classifying instrument, by such people as Tyler Screen Company, U. S. Bureau of Standards, Dr. Rufe's Classifier, and the Bauer-McNutt followed by the Canadian Forest Products Laboratories. The screen is composed of a constant head box which supplies two separate members containing rotating screens, the first composed of 28 mesh and the second 100 mesh. Thus, three fractions are possible; those retained on the first screen, those retained on the second, and those draining through the second.

Advantages Claimed

The advantages claimed of the screen perfected by the speaker and his cohorts are:—

1. Short time necessary to run a single sample,
2. Adequate clearance between the rotating screen and the plate which forms freedom of movement for the fibers.
3. Simplicity of equipment,
4. The screens in the instrument are readily interchangeable, depending on the stock to be used, and
5. Ability of the instrument to check its own results.

There were four variables to be considered in the operation of the classifier before it could be standardized. These variables were as follows:—

1. SPEED OF THE ROTATING SCREEN
   As speed increased, the amount retained on the screen was lowered. 36 R.P.M. was found to be adequate when using 15 liters per minute.
2. RATE OF FLOW
   The highest possible rate of flow would be the best for accurate results. From 10 to 20 liters per minute were tried and the instrument finally standardized at 15 liters.
3. WEIGHT OF SAMPLE
   Mr. Brainerd found that regardless of the weight of the sample, the ratios of the various fractions through the screen were found to be equal. Inasmuch as this was true, 5 grams was selected as standard, as it would take less time for this amount of stock to be classified.
4. LENGTH OF RUN
   Five minutes was adopted, since the slope of the curve becomes constant at this point regardless of the type of pulp used.

Mr. Brainerd described tests which were run at Scott Paper Company, wherein results from the classifier could be tied in very accurately with general operation. Results of his work also indicated that the present widely used tests such as bursting length, elmendorf and freeness were in themselves inadequate, and that the equipment under discussion filled the gap necessary to properly translate results of pulp tests or stock preparation.

Practical Applications

The practical applications of such a unit were enumerated to be as follows:—

1. Exact determination could be made as to what happens to stock when the Jordan Amperage is set up with the plug running from free to hard against the shell.
2. The effect of back pressure on Jordan operation. Conclusions reached here that there was no difference (volume of stock remaining the same in either case with the same power input).
3. Trials run in conjunction with the Koller Gang on soft bleached sulphite allowed an accurate interpretation of the type of sulphite received, which is impossible through other routine tests.
4. Exact correlation of Laboratory vs. Mill beating.
5. Testing consecutive shipments of pulp for uniformity.
6. Consecutive groundwood shipments. In this instance Mr. Brainerd showed that in using drainage time instead of the usual freeness test, when the freeness was higher, the fines were higher, which is contrary to normal expectations.
7. Comparisons between two identical paper machines running side by side, supplied from the

(Concluded on page 31)

Obituary

Frank Pierce Carpenter

Frank Pierce Carpenter, 92, president of the Amoskeag Paper Mills Company, Manchester, N. H., died at his home in Manchester April 13.

A native of Chichester, N. H., Carpenter was graduated from high school in Concord, N. H. He had been president of the Amoskeag Paper Mills Company since 1885. He was also a founder and former president of the Burgess Sulphite Fiber Company.

Mr. Carpenter was a leader in the organization of Amoskeag Industries, Inc., to reclaim the great plant of the Amoskeag Manufacturing Company when it closed its huge textile operations in 1936. It is estimated that Mr. Carpenter gave away $4,000,000 to charities in the last twenty-five years. He also contributed very generously to the erection of public buildings and other civic improvements in Manchester.

Among his many interests, Mr. Carpenter was treasurer and trustee of the Mechanics Savings Bank, trustee of the Amoskeag National Bank, a director of the Boston & Maine Railroad and other business enterprises. He had served the city and private institutions on various boards and commissions.

In 1928 Mr. Carpenter donated $300,000 to Dartmouth College, at which time he was a trustee of the college, which bestowed upon him in 1915 an honorary M. A. degree, and an L.L.D. degree in 1929. He was the donor of the Carpenter Library in Manchester as a memorial to his wife, who died in 1910.

Surviving, are two children, Aretas Blood Carpenter and Mrs. Charles B. Manning, both of Manchester.

G. E. Buchanan

APPLETON, Wis., April 18, 1938.—Funeral services for G. E. Buchanan, secretary-treasurer of the Appleton Wire Works, Appleton, Wis., were held at the First Congregational Church at Appleton Tuesday afternoon, April 12. More than 500 persons attended, including 150 of the wire works employes. The Rev. John B. Hanna conducted the last rites, and burial was made in the family lot at Riverside cemetery.

Mr. Buchanan was 68 years old. He was born in Belleville, N. J., March 17, 1870. With his father, William Buchanan, now deceased, and his uncle, Albert B. Weissenborn, now president of the wire works, he founded the present industry in 1896, the first paper mill wire cloth plant in the middle west. He was secretary-treasurer during the entire time.

Under the terms of Mr. Buchanan's will, he leaves 875 shares of preferred stock and 1,050 shares of common in the Appleton Wire Works to his widow, as well as $66,000 worth of insurance, the real estate and residue of personal property. Two daughters, Mrs. Frederick Lenfesty of De Pere, Wis., and Miss Betty Jean Buchanan, and a son, James P. Buchanan, each will receive 175 shares of preferred and 210 shares of common stock in the corporation. The will mentions that a like amount already had been given to another son, William E. Buchanan, who is sales manager of the company. An additional $50,000 of insurance goes to the estate. Other bequests include $3,000 to the First Congregational Church of Appleton, and $2,000 each to the Y. M. C. A. and Appleton Masonic Temple Association. Mrs. Buchanan and William are named executrix and executor, respectively, of the estate.

John C. Campbell

John C. Campbell, 78, president of the Newark Wire Cloth Company, Newark, N. J., died March 18 at his home in Newark after a short illness.

Mr. Campbell started in the wire cloth industry sixty years ago with Stephen's Mills, later known as the DeWitt Cloth Company, Belleville, N. J. He was later associated with the Eastwood Wire Company. He developed many special processes for weaving wire cloth and was a leader in developing this product to a high quality. He also perfected a spiral weave filter cloth now in use throughout the world.

Mr. Campbell was a member of the Newark Chamber of Commerce and of the National Association of Manufacturers.

Surviving, are his widow, two sons, Alvin A. of Hackettstown and Leggett C., secretary-treasurer of the Newark Wire Cloth Company for many years; three daughters and twelve grandchildren. Burial was in East Ridgelawn Cemetery.

Abraham Lipman

Abraham Lipman, 63, founder of the Lipman Paper Company, Brooklyn, N. Y., paper stock dealers, died of a heart ailment at the Brooklyn Hospital April 12.

Born in Russia, Mr. Lipman came to this country when a child. In 1912 he organized the Lipman Paper Company which marketed waste paper of several New York newspapers. For several years the gross business of the company is stated to have amounted to one million dollars annually. The paper stock was exported to many parts of the world.

Mr. Lipman suffered from rheumatism and this prompted him to found the Mount Clemens Sanitorium at Mount Clemens, Mich., a non-charitable institution for the care of persons suffering from rheumatic ailments.

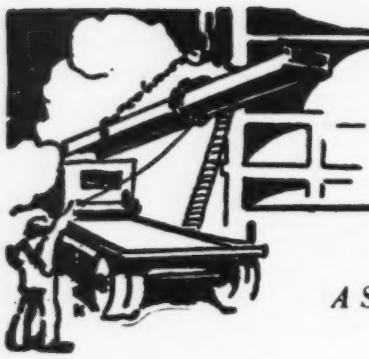
Surviving are his widow, five sons and two daughters.

Frank M. Ball

APPLETON, Wis., April 18, 1938.—Frank M. Ball, owner and operator of the Amalgamated Paper Company until its absorption by the International Paper Company, who died April 11, was a native of Chetek, Wis. He was graduated from the University of Minnesota in 1899, and worked for the Crowell Publishing Company until coming to New York in 1919. He was a former circulation manager of the New York Tribune.

Swedish Pulp Officials Visit U. S.

Two officials of the Swedish Pulp Company, Stockholm, Sweden, Torsten Hernod, president and managing director, and Einar Flygt, vice-president and director of sales, have spent a few weeks in the U. S. A., for the purpose of securing first-hand information concerning prevailing conditions in the pulp and paper industries on this side. It has been reported that these gentlemen intend to return to Europe on Friday, April 22, and the PAPER TRADE JOURNAL wishes them Bon Voyage.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Mount Vernon, Ohio—The Shellmar Products Company, 224 South Michigan avenue, Chicago, Ill., manufacturer of printed cellophane products, has approved plans for new addition to converting plant at Mount Vernon, to be one-story, 100 x 200 feet, reported to cost over $75,000, with equipment. Superstructure is scheduled to be placed under way at once, with completion scheduled early in the summer.

Jackson, Mich.—The Pulp and Paper Corporation, recently organized to manufacture pulp and paper specialties, has taken over a portion of plant of the Potter Manufacturing Company, and will occupy at once for new mill. Buildings will be improved and equipment installed for large capacity. Facilities will be provided for the employment of about 50 men for initial operations. A division will be established for the production of cellulose products. It is proposed to have mill ready for service at early date. Clarence A. Bradford is president of new company.

Laurel, Miss.—The Masonite Corporation, manufacturer of insulating board and other special wood pulp products, has begun work on the establishment of a new experimental plant unit, to be utilized as a byproduct plant division for recovering waste fiber board materials, as recently noted in these columns. New plant will be used for the production of a number of chemical specialties, including wood sugar, and is expected to be ready for operation in near future. Company is now manufacturing a new type of board material of plastic nature, known as "Benaloid," using another experimental plant unit, recently completed, for this purpose, and expects to develop large output.

Mobile, Ala.—The Hollingsworth & Whitney Company, 140 Federal street, Boston, Mass., manufactur of bond and other writing papers, waxed and other paper stocks, has concluded negotiations for a 99-year lease on a tract of land at the Alabama State Docks, Mobile, to be used as a site for new pulp and paper mill for production of kraft paper stocks. Plant will comprise a group of one and multi-story units, with power house, machine shop and other mechanical departments, and will represent an ultimate investment of close to $5,000,000. Machinery and equipment will be installed for employment of about 1000 workers in different departments. No date has as yet been announced when work on project will begin. Company is now operating three mills in Maine, at Gardiner, Madison and Winslow, respectively.

Springhill, La.—The Southern Kraft Corporation, 220 East 42nd street, New York, N. Y., a subsidiary of the International Paper Company, same address, is pushing construction of new pulp and paper mill at Springhill, previously referred to in these columns, and completion of project is now scheduled by June 30 next. The pulp mill, equipped for the production of bleached sulphate pulp, will have a rated capacity of 45,000 tons per annum, with corresponding output for the kraft board mill. Operation of the latter plant at time of completion noted will depend on the demand for kraft paper board materials at that date, and it is possible that active production will be deferred for a number of weeks. The entire project will represent an investment of about $10,000,000, and of this amount approximately $8,500,000 has been expended up to the present time.

Louisville, Ky.—The Reynolds Metals Company, 2934 Grand avenue, manufacturer of metal foil products, has curtailed operations at local plant, with a reduction in working force from about 1000 to 450 persons, and will continue on reduced basis for an indefinite period. The local plant will be operated as an auxiliary of other mills of the company in different parts of the country in the future, supplementing the output of these plants. Main offices of company are at 19 Rector street, New York, N. Y. W. K. A. Ferguson is manager.

Chicago, Ill.—The Federal Loose Leaf and Ledger Company, 416 South Dearborn street, recently organized with capital of $75,000 and 1,950 shares of stock, no par value, plans operation of a local paper-converting plant for the manufacture of commercial paper products, loose leaf specialties, etc. Incorporators of new company include Leroy C. Huerlin and James J. Muench, 100 West Monroe street, Chicago. Last noted is company representative.

New York, N. Y.—The Merriam Paper Company, wholesale paper products, has removed its storage and distributing plant from 150 Lafayette street to building at 135 Hudson street, where lease was recently arranged, and will operate at latter location in future, including company offices.

Port Credit, Ont.—H. K. Ferguson & Co., Hanna Building, Cleveland, Ohio, and 25 West Forty-third street, New York, N. Y., engineers and contractors, are reported to have plans under way for new pulp and paper mill at Port Credit, for a company whose name is temporarily withheld. New plant will consist of several large units and is estimated to cost close to $2,000,000, with machinery. Plans are also said to be in progress by same company for another pulp and paper mill at Elias, Ont.,

for similar interests, to be given over to newsprint manufacture. It will be equipped for large capacity, with cost estimated in excess of $4,000,000, including buildings and equipment, power house and miscellaneous structures.

La Tuque, Que.—The Brown Corporation, 71 St. Peter street, Quebec, Que., has approved plans for new addition to mill at La Tuque, specializing in the production of bleached and unbleached kraft fiber, to be used as a barking mill for pulp division. New unit will be of two-drum capacity and is estimated to cost about $125,000, with machinery. A general contract for building erection has been awarded to the Foundation Company, Ltd., 1538 Sherbrooke street West, Montreal, and work is scheduled to begin at early date. J. K. Nesbitt, first noted address, is company architect.

Fairville, N. B.—Wilson Boxes, Ltd., Wall street, St. John, Newfoundland, manufacturer of corrugated and other boxes and containers, has plans under way for new plant at Fairville, comprising a main one-story unit and auxiliary buildings, estimated to cost about $70,000, with equipment. Work is scheduled to begin soon.

Sydney, Australia—The Masonite Corporation (Australia), Ltd., affiliated with the Masonite Corporation, Laurel, Miss., manufacturer of insulating board products, special pressed board, etc., has broken ground for proposed new mill at Raymond Terrace, near Newcastle, New South Wales, where tract of land was acquired recently, as previously reported in these columns, and will proceed with erection of superstructure this spring. It will consist of a group of units, with power house, machine shop and other mechanical departments, and is estimated to cost close to $450,000, including equipment. Completion is scheduled in the fall of 1938. F. W. Pettingell is company engineer in charge of erection.

New KVP Yankee Gets Early Start

Glenn Stewart of the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich., writes:

"They're making paper up in Mill 3 on the new Yankee, and good paper, too, paper that can be printed on, paper that can be sold, paper that is already better paper than anything we have ever had for the purposes it is intended. No wonder everybody from J. K. on down is going around with a grin. Nothing quite like this ever happened to any paper mill before, not with machines this size. For they had paper on the reel Monday morning less than an hour after they got up a head. That's rolling, boys and girls, that's rolling!

"We could go on and on. But we'll let the Yankee do it for us. Too much credit due in too many places to tell it here. Just briefly, Fourdrinier by Bagley & Sewall, dryers by Beloit, a thousand and one things here and there by KVP. Called a "Yankee" because one of the driers is 12 feet in diameter and somebody hooked that name on it years ago. Otherwise, just like any other machine using Fourdrinier principle. Two sets of usual 5-foot driers, one fore, the other Yankee to put smoother surface on paper, resulting in better printing surface, to take less ink. Width of wire, 138 inches. Trim, 126 inches. Speed, well over 800. It will be run this week mostly to find its bugs. Find 'em days, fix 'em nights. But next week—watch her smoke!"

DELAWARE TAPPI MEETS

(Concluded from page 28)

same chest. Mr. Brainerd found that whereas the drainage factors of the pulp were the same, the fractionation tests were different, indicating that the machine Jordan gave a different action on the stock.

Mr. Brainerd closed by giving the statement that all properties of pulp can qualitatively be determined with a fairly high degree of accuracy with the use of this apparatus. Slides were shown throughout Mr. Brainerd's presentation, which aided greatly in making his points clear to the members.

Those present were: G. E. Landt, Continental Diamond Fibre Company, Bridgeport, Pa.; S. D. Reynolds and J. C. Shaw, Container Corporation of America, Manayunk, Pa.; R. E. Smith, H. M. Wilson Company, Philadelphia; B. R. Havens, Container Corporation of America, Manayunk; V. Jacobsen, National Aniline and Chemical Company, Philadelphia; W. M. Shoemaker, National Vulcanized Fibre Company, Yorklyn, Del.; L. F. Dear, Goulds Pumps Inc., Seneca Falls, N. Y.; R. M. Bates, Thos. M. Royal & Co., Philadelphia; Charles McDowell, McDowell Paper Mills, Manayunk; E. J. Albert, Thwing-Albert Instrument Company, Philadelphia; H. Hulmes, Moore & White Company, Philadelphia; J. R. Atwater, Dill & Collins Inc., Philadelphia; James d'A. Clark, Scott Paper Company, Chester, Pa.; F. W. Brainerd, same company; J. H. Fritz, National Oil Products Company, Harrison, N. J.; G. A. Ritter, Container Corporation of America, Manayunk; Henry Reeves Jr., Hercules Powder Company, Wilmington, Del.; E. A. Ellis and L. E. Smutts, Downingtown Manufacturing Company, Downingtown, Pa.; G. C. Walton, same company; H. C. Speel, Atlas Powder Company, Wilmington, Del.; M. C. Maxwell, McDowell Paper Mills, Manayunk; M. L. Little, J. C. Dieffenderfer and M. C. Loveland, Hercules Powder Company, Wilmington; G. L. Schwartz, Dupont Company, Wilmington; D. Manson Sutherland Jr., Trenton, N. J.; R. W. K. Ulm, Container Corporation of America, Manayunk; C. W. Cassell, Congoleum-Nairn Inc., Cedarhurst, Md.; A. L. M. Bixler, Riegel Paper Corporation, Milford, N. J.; W. F. Mitchell, Pennsylvania Salt Manufacturing Company, Philadelphia; J. Carl Schmidt, Dupont Company, Philadelphia; L. M. Booth, Booth Chemical Company, Elizabeth, N. J.; G. B. Martin, General Dyestuffs Corporation, Philadelphia; J. D. Davis, Dill & Collins Inc., Philadelphia; A. J. Luettgen, P. H. Glatfelter Company, Spring Grove, Pa.; P. M. Loddengaard, Bulkley, Dunton & Co., New York, N. Y.; R. H. Bentz, P. H. Glatfelter Company, Spring Grove, Pa.; R. J. Stuart, Messinger Bearings Inc., Philadelphia; E. H. Koontz, Reliance Electric and Engineering Company, Cleveland, Ohio; F. P. Thornton, Stowe-Woodward Inc., New York, N. Y.; J. Roslund, Asten-Hill Manufacturing Company, Philadelphia.

To Handle Crocker, McElwain Lines

The Baldwin Paper Company Inc., 233 Spring street, New York, has been appointed a distributor for Militant Bond, Economic Ledger, and Certificate and Militant Index, four well-known and popular Crocker, McElwain grades.

PAPER TRADE JOURNAL

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COMING EVENTS IN THE PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry— Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park,American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILLS SUPERINTENDENTS ASSOCIATION. Annual meeting, Royal York Hotel, Toronto, Ont., June 22-24.

RECESSION AFFECTS PAPER LESS THAN OTHER INDUSTRIES

Unchallenged for six years, the peak for paper production in the United States, which was established in 1929 at 11,140,235 tons, first surrendered its pre-eminence in 1936. The latter year overshadowed it by 7.5 per cent, as production rose to 11,975,552 tons. It was left farther behind in 1937, when production advanced to 12,600,000 tons, outweighing the 1936 tonnage by 5.2 per cent, and that of 1929 by 13.1 per cent. This was an outstanding achievement, in view of the 40 per cent slump in mill production ratios during the second half of 1937.

Higher by 1.4 per cent than the peak of 607,590 tons, which had weathered the years since 1929, writing paper production set up a new one by going to 616,000 tons for 1937, according to the statistics of the Writing and Cover Paper Manufacturers' Association. Book, wrapping, and tissue papers, and paper board also reached all-time production highs in 1937. Newsprint production for the United States and Canada finally entered new high ground, as 1937 total of 4,591,030 tons, computed by the News Print Service Bureau, was 11.4 per cent over the 4,121,103 for 1929.

Less affected than some of the other major industries by the 1937 year-end slump, mill operations were lifted 17 per ent from December to January. While the incline lengthened through February and March, 1938, first-quarter operating ratio was down 25 per cent from 1937. Tonnage production fell 10 to 25 per cent; wholesale volume shrank 15 to 30 per cent. Price structure generally was firm, despite isolated weakness. These were some of the major developments revealed by a survey of the paper industry, which has just been completed by Dun & Bradstreet, Inc.

After reaching 92.1 per cent of capacity in April, 1937, operations at paper mills tumbled to 54.5 per cent by December. This was a drop of 40.8 per cent in eight months, during the last four of which the monthly difference was extended progressively from the corresponding 1936 rate. Despite this steep slide, the industry's operating ratio for 1937 averaged 85 per cent of capacity, the highest on record, excepting 1920 at 86 per cent.

January operating ratio, based upon paper production reports to the American Paper and Pulp Association, rose 17.2 per cent from December to 63.9 per cent of capacity. The rise was lengthened to 68.7 for February, and to 69.2 for March. Compared respectively with 90.3, 90.1, and 90.3 for January, February, and March, 1937, the drop was 29.2, 23.7, and 23.4 per cent. Up from 108.2 in January to 108.8 in February, Department of Labor's employment index for the paper and pulp industry was down 6.3 per cent from February, 1937.

While paper production for the first quarter went 10 to 25 per cent under the comparable 1937 tonnage, the loss was not uniform in all divisions. Orders were more numerous for cover than for book, ledger, and other fine paper items. Kraft held the steadiest level in the coarse paper group. Newsprint dropped 22.5 per cent from the 1937 first-quarter output; January marked the first year-to-year loss in thirty-one months. February at 263,958 tons was down 24.1 per cent from 1937 to a three-year monthly low.

Curtailment of orders to wholesalers, which started as early as August, 1937, was gripped almost to cessation by December. At the opening of the current year, markets were dull. Uneven improvement appeared late in January and spread at a faster pace through February and March. Despite this upturn, orders received during the first quarter of 1938 were 15 to 30 per cent smaller than the comparative 1937 volume, with the average estimated around 15 per cent. Decline in office forms and stationery was about 10 per cent.

Situation thus was reversed from that of the 1937 first quarter, when wholesale volume jumped 15 to 40 per cent over its 1936 comparative. By the end of the third quarter, however, the spread had been narrowed to 10 to 20 per cent. With successive year-to-year losses deepened during the final three months, all that was left at the close of 1937 was an increase

of 8 to 12 per cent over the 1936 wholesale volume. This sudden check in the order flow caught some wholesalers with inventories 25 per cent larger than on December 31, 1936.

Preliminary report of the "Survey of Business Trends" gave the inventories of 47 wholesalers of paper and paper products, at the close of 1937, as 12 per cent more than at the 1936 year-end. By April 1, some of the wholesalers had worked down their inventories 5 to 10 per cent, in spite of the cautious buying policy of retailers. Majority of orders released was for urgent use, but covered only immediate needs, with quantity specified small.

No major price mark-downs occurred as a corollary of the restricted sales since last fall. Price-cutting developed to some extent, but was confined chiefly to converted paper products in comparatively small quantities. Both krafts and book papers have held steady. The small reductions on some grades of sulphate bond papers were not general.

On most grades of coarse paper, fall quotations were maintained, due to higher wages and increased costs of materials and distribution. Contract newsprint was advanced on January 1, as scheduled, from $42.50, which obtained during 1937, to $50 a short ton for the first half of 1938. No announcement was made regarding the second half-year price.

Index of wholesale paper and pulp prices of Bureau of Labor Statistics hit the 1937 high at 95.0 in June. Irregular downtrend left but 89.8 for December, or 5.9 per cent ahead of January at 84.8. Edging to 90 for January, 1938, it slipped in February to 89.7, which was 2.5 per cent over 1937, and above previous February indexes to 1928 at 92.6.

Eagle Lodge for New Agreement

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, April 18, 1938—The working contract between the majority of Holyoke Paper Manufacturers and the Eagle Lodge of Papermakers expires in June of this year and negotiations for the new agreement will get underway on Wednesday of this coming week. The negotiating committee of the union will meet with Adam Wilkinson, Industrial Relations counsel and former labor relations commissioner of the American Writing Paper Corporation, to receive the proposed contract which the employers are willing to offer. The union will meet in special session Sunday afternoon, April 24, to consider the terms.

Mr. Wilkinson has acted frequently for all paper manufacturers in this section in the past even while employed exclusively by the American Writing Paper Corporation, and still continues as their representative although now in private practice and consultant in many industries in this section.

Bids Asked for Distinctive Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 20, 1938—The Treasury Department has announced that it will receive bids on May 5 for 1,300 tons of distinctive paper for the use of currency and other special jobs.

Production Ratio Report

The statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	.....
February	68.7%	90.1%	77.9%	70.0%	.....
March	69.3%	90.3%	76.0%	70.5%	.....
April	.....	92.1%	82.3%	70.0%	.....
May	.....	90.6%	81.6%	69.4%	.....
June	.....	87.3%	80.7%	72.3%	.....
July	.....	81.8%	77.3%	64.9%	.....
August	.....	82.9%	81.5%	70.9%	.....
September	.....	78.6%	80.5%	71.9%	58.2%
October	.....	73.5%	87.6%	75.6%	64.7%
November	.....	61.9%	88.0%	75.3%	61.7%
December	.....	54.5%	85.9%	71.2%	59.6%
Year Average	.....	80.6%	81.3%	70.5%	.....
First 14 weeks	67.4%	90.4%	77.3%	68.7%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*March 5	67.7%	March 6	89.2%
*March 12	70.0%	March 13	90.6%
*March 19	68.7%	March 20	90.7%
*March 26	67.8%	March 27	91.1%
*April 2	72.1%	April 3	89.7%
*April 9	66.7%	April 10	92.4%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Mar. 5, 1938	Mar. 12, 1938	Mar. 19, 1938	Mar. 26, 1938	April 2, 1938	April 9, 1938
0% to 50%	95	80	100	95	87	70
51% to 100%	202	217	197	199	193	136
Total Mills Reporting	297	297	297	294	280	206

* Subject to revision until all reports are received.
(c) Capacity data have been adjusted to correspond with ratings reported by individual companies.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Mos.	1938 (e)	1937 (e)	1936	1935	Mos.	1938 (e)	1937 (e)	1936	1935
Jan.	55%	80%	61%	61%	July	....	67%	69%	59%
Feb.	61%	86%	67%	67%	Aug.	....	74%	75%	65%
Mar.	....	87%	68%	67%	Sept.	....	70%	76%	69%
Apr.	....	89%	70%	61%	Oct.	....	66%	82%	76%
May	....	86%	68%	61%	Nov.	....	56%	79%	70%
June	....	75%	68%	65%	Dec.	....	46%	74%	60%

Week end. Mar. 5, 1938—59% | Week end. Mar. 26, 1938—62%
Week end. Mar. 12, 1938—61% | Week end. April 2, 1938—61%
Week end. Mar. 19, 1938—60% | Week end. April 9, 1938—58%

(e) Basic figures revised to include new members of the National Paperboard Assn.

To Make Cartons at Thorndike

THORNDIKE, Mass., April 13, 1938 — Industrial prospects for the village of Thorndike were considerably brightened recently with the announcement that the S. C. S. Box Company, owners of the Thorndike mill property had sold the No. 2 mill building to the Self-Locking Carton Company of Chicago. The new company also purchased the manufacturing rights on the pulp egg box products of the S. C. S. Company and will use the newly acquired building for their manufacture. They expect to considerably expand this business in the near future, which has been running at capacity with its present equipment for a number of weeks. The machinery for its manufacture is included in the transfer. This machinery is already set up and operating in the mill they have purchased. F. H. Sherman, who has been manager of the S. C. S. Company for a number of years has been engaged as manager of the new concern and will sever his connection with the box company. The S. C. S. Company will continue to operate in their present quarters on the manufacture of other types of boxes and cartons.

REMOVING BARRIERS TO PROGRESS

CHINA CLAY

BRIGHT IN COLOR—LOW IN GRIT CONTENT

Uniformity, bright color and low grit content are assured in Cyanamid China Clays by special care in production and the use of the most modern manufacturing equipment. In addition to this assurance of quality, Cyanamid offers to paper mills the cooperation of experienced paper chemists in putting these clays to use to secure the best results obtainable. Our plants are located at convenient shipping points. We are prepared to give you exceptionally prompt service.

Wherever your plant is located, see Cyanamid first for Domestic Air-Floated, Water-Washed and Coating Clays, and for a complete variety of English Coating and Filler Clays.

American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

Section of the

Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

First Quarter, 1938

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete.

Copies of any of the following patents may be obtained from the Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. Personal checks and postage stamps are not accepted in payment for patents. Books of coupons containing 20 coupons or 100 coupons may be purchased for $2.00 or $10.00, respectively.

JANUARY 4, 1938

2,104,025. Decalcomania paper. Lewis Davis, assignor to McLaurin-Jones Co., Brookfield, Mass. Filed Aug. 23, 1934. 9 claims. (Cl. 41-33). A backing sheet, an outer waterproof coating and a protective coating of a rubbery nature between the coating and said sheet.

2,104,047. Apparatus for predicting air resistance of fibrous articles. Ernest Kendall Long, Baltimore, Md. Filed April 23, 1935. 1 claim. (Cl. 73-51). Apparatus for rapidly drying and testing the air resistance of sample test pads of fibrous material.

2,104,052. Apparatus for making saturated, sized, filled, or coated paper or fiberboard. Izador J. Novak, assignor to Raybestos-Manhattan, Inc., Bridgeport, Conn. Filed July 19, 1933. 4 claims. (Cl. 92-40). A vat with a hollow roll rotating therein and means for removing excess saturating liquid.

2,104,057. Method of applying films made from viscose to paper and the like. Clyde Scott, Newark, N. J. Filed April 14, 1933. 29 claims. (Cl. 154-40). The film is coated with a lacquer solution of nitrocellulose and linseed oil, dried, and then coated with resinous material, said resinous material becoming adherent under the influence of heat.

2,104,060. Corrugated structure. Allen L. Spafford, assignor to Wood Conversion Company, Cloquet, Minn. Filed Oct. 16, 1931. 5 claims. (Cl. 154-55). A sheet having parallel corrugations, which is creped with lines diagonal to said corrugations and a flexible facing sheet secured thereto.

2,104,067. Shingle. Henry H. Bailey, assignor to The Barrett Company, New York, N. Y. Filed Dec. 22, 1933. 5 claims. (Cl. 109-7).

2,104,077. Aqueous emulsion of waterproofing material. Edwin O. Groskopf, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed March 9, 1935. 12 claims. (Cl. 134-1). An aqueous emulsion comprising waterproofing material dispersed in an aqueous vehicle containing bentonite-like material as emulsifying agent.

2,104,078. Interlocking flexible shingle. Marston Lovell Hamlin, assignor to The Barrett Company, New York, N. Y. Filed Dec. 9, 1931. 19 claims. (Cl. 108-7).

2,104,081. Laminated sheet and process of making same. John A. Kenney, assignor to The Barrett Company, New York, N. Y. Filed Jan. 20, 1934. 11 claims. (Cl. 92-21). Use of an aqueous dispersion of a hard resin of the coumarone-indene type with pulp, forming in a sheet and subjecting the sheet to pressure and a temperature above the melting point of the resin.

2,104,082. Building material and process of making same. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed March 27, 1935. 4 claims. (Cl. 91-68). Shingles of the asbestos-Portland cement type.

2,104,091. Method of roasting ore. Edwin J. Mullen, assignor to General Chemical Company, New York, N. Y. Filed June 27, 1935. 1 claim. (Cl. 75-9). Method of roasting finely divided metal sulphides with the production of sulphur dioxide.

2,104,120. Bleaching composition. Harvey N. Gilbert and Ignatius J. Wernert, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Jan. 9, 1936. 3 claims. (Cl. 8-2). A solid composition for use in bleaching comprising sodium peroxide and metaboric acid.

2,104,384. Method of manufacturing roofing elements. William A. Harris, assignor to The Texas Company, New York, N. Y. Filed July 25, 1936. 4 claims. (Cl. 91-68).

2,104,535. Method of and process for forming paper cups. Cesare Barbieri, assignor to Dixie-Vortex Company, Chicago, Ill. Filed May 9, 1936. 7 claims. (Cl. 93-36.2).

2,104,594. Segmental pulp wheel. George B. Rickard, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed June 18, 1937. 6 claims. (Cl. 51-207).

2,104,701. Process of making vanillin. Lloyd T. Sandborn, assignor to Marathon Paper Mills Company, Rothschild, Wis., and Guy C. Howard Company, Rothschild, Wis. Filed March 1, 1937. 16 claims. (Cl. 260-137). A lignin-containing product is heated under pressure with water and an alkali-metal hydroxide and the vanillin is extracted with a substantially water-immiscible alcohol.

JANUARY 11, 1938

2,104,727. Method of an apparatus for folding sheet material. Maurice M. Balsam and William L. Lawson, New York, N. Y.; said Balsam assignor to said Lawson. Filed May 20, 1936. 25 claims. (Cl. 93-39.1). Apparatus for folding a blank sheet of material into a hollow shape.

2,104,774. Paper roll and method of splicing to expiring web. David J. Scott, assignor to Walter Scott & Company, Plainfield, N. J. Filed June 12, 1935. 13 claims. (Cl. 242-58). A roll of paper having an exposed leading end, a weakened area in said end and means for connecting said weakened area to the body of the roll.

2,104,814. Process and machine for making window bags. George W. Poppe, assignor to Equitable Paper Bag Co. Inc., Brooklyn, N. Y. Filed Aug. 6, 1936. 8 claims. (Cl. 93-8).

2,104,996. Manufacture of corrugated paper. Charles Quincy Ives, assignor to Sherman Paper Products Corporation, Newton, Mass. Filed March 11, 1937. 11 claims. (Cl. 92-70). Method of corrugating a paper sheet containing leather fiber under sufficient heat to cause incipient fusion of said leather fiber.

2,105,025. Box and box blank. Jesse T. Curtis, Cleveland, Ohio. Filed April 23, 1936. 4 claims. (Cl. 229-37).

2,105,052. Process for manufacturing paper. Johan Oltmans, Groningen, Netherlands. Filed April 22, 1936. 7 claims. (Cl. 92-21). Sized paper containing up to 5% by weight of a cold swelling starch which is uniformly distributed throughout the paper.

2,105,268. Laminated product. Adrian A. Robinson, assignor to Wilson & Co., Inc., Chicago, Ill. Filed Oct. 17, 1935. 1 claim. (Cl. 154-45.9). A plurality of layers of porous fabric impregnated uniformly throughout with a binder comprising soluble blood and a synthetic resin, the layers being consolidated under heat and pressure to produce a tough, flexible, highly waterproof laminated product.

2,105,270. Method of making boxes. George B. Scheffey, assignor to Box Blank Corporation, New York, N. Y. Filed June 12, 1936. 13 claims. (Cl. 93-36).

2,105,273. Apparatus for manufacturing cellulose coated and impregnated fibrous tubes. John Paul Smith, assignor to The Visking Corporation, Chicago, Ill. Filed June 8, 1935. 24 claims. (Cl. 93-82).

2,105,359. Composite box and manufacture thereof. Frank Rodgers Neely, assignor to A. H. Balliet Corporation, Allentown, Pa. Filed Aug. 15, 1931. 4 claims. (Cl. 93-43). Composite drop lid end box.

2,105,367. Wrapper or label for toilet packages. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed Aug. 29, 1933. 2 claims. (Cl. 229-87). Wrapper is made of paper having its grain extending substantially parallel to the axis of said package.

2,105,368. Toilet roll package. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed March 19, 1935. 1 claim. (Cl. 206-59). Wrapper and method of closing same.

2,105,375. Box making machine. George B. Scheffey, assignor to John D. Tennant, Philadelphia, Pa. Filed Sept. 13,1935. 18 claims. (Cl. 93-36.6). In a machine for making covered box blanks, means for applying cover paper to shell material and pneumatic means for forming a temporary longitudinal groove or grooves in said cover paper substantially during application thereof to the shell material permitting transverse yielding thereof in setting up the box blank.

2,105,376. Valve bag. Douglas E. Scott, assignor to The Chase Bag Company, Cleveland, Ohio. Filed Dec. 18, 1936. 4 claims. (Cl. 229-62.5).

2,105,440. Manufacture of metal coated paper. Bert C. Miller, assignor to Bert C. Miller, Inc., New York, N. Y. Filed Aug. 30, 1935. 9 claims. (Cl. 204-6). Process of applying thin layer of electrodeposited metal from a moving cathode and an adhesive to a sheet of paper.

JANUARY 18, 1938

2,105,484. Floor covering. Louis Leonard Larson and George Lewis Schwartz, assignor to Krafelt Corporation of America, Wilmington, Del. Filed March 20, 1935. 7 claims. (Cl. 91-68). Method of saturating absorbent paper felt sheet material, applying print paint and curling with heat.

2,105,488. Apparatus for applying mobile films. Peter J. Massey, William F. Thiele, and Bert F. Raprager, assignors of nine-tenths to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., and one-tenth to Peter J. Massey, Chicago, Ill. Filed Sept. 11, 1935. 10 claims. (Cl. 91-50). An apparatus for distributing coating materials having rolls carried by pivotally mounted standards which can be adjusted to control the contiguity of the rolls.

2,105,489. Protective covering. William Henry Moss, assignor to Celanese Corporation of America, New York, N. Y. Filed Aug. 10, 1934. 12 claims. (Cl. 91-68). A lacquer base and a plasticizer for coating tape, ribbon, fabric, etc.

2,105,503. Pigment manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Jan. 26, 1932. 4 claims. (Cl. 134-58). Method of causticizing lime containing magnesia with an alkali metal carbonate.

2,105,531. Method of making bituminized web materials. Harold W. Greider and George Arthur Fasold, assignors to The Philip Carey Manufacturing Company, Cincinnati, Ohio. Filed July 20, 1933. 10 claims. (Cl. 91-70). Method

of impregnating roofing with saturant in such a way that foam of bubbles is not in contact with web.

2,105,582. Machine for the manufacture of cartons and the like. William Joseph Butler, assignor to Kleentainers (British & Overseas) Ltd., Bromley, England. Filed Dec. 1, 1936. 7 claims. (Cl. 93-39.3).

2,105,593. Apparatus for molding pulp bodies. William H. Hatton, Gardner, Mass. Filed June 18, 1936. 3 claims. (Cl. 92-57). A die and a basket structure conforming to the article to be formed set between the dies.

2,105,620. Box making machine. Claude M. Stitt, assignor to Fibreboard Products, Inc., San Francisco, Calif. Filed March 9, 1937. 17 claims. (Cl. 93-49).

2,105,697. Adhesive and coating composition. Alexander D. Macdonald, assignor to B. B. Chemical Co., Boston, Mass. Filed Sept. 5, 1934. 7 claims. (Cl. 134-26). Polymerized haloprene dissolved in a cyclic ether of the glycols.

2,105,707. Device for winding and cutting cellophane. Louis G. Stancliff, Cincinnati, Ohio. Filed July 28, 1936. 9 claims. (Cl. 242-56).

2,105,711. Method for producing layers of distended fibrous material. George C. Weathered, assignor to Cellufoam Corporation, Chicago, Ill. Filed Jan. 22, 1936. 3 claims. (Cl. 92.39).

2,105,726. Strip cutting and applying machine. Nestor Fries, assignor to Flashfold Box Corporation, Fort Wayne, Ind. Filed July 22, 1936. 3 claims. (Cl. 93-36).

2,105,728. Adhesive tape. Leon W. Geller, Astoria, N. Y., assignor of two-thirds to Nelson J. Fonarow, New York, N. Y. Filed July 8, 1936. 9 claims. (Cl. 154-43).

2,105,844. Container blank. Walter G. Reagan, Lebanon, Ind. Filed Aug. 29, 1936. 8 claims. (Cl. 229-1.5). A blank for conical packages.

2,105,881. Friction tape wrapping. Donald W. Fether, assignor to Emsco Asbestos Company, Downey, Calif. Filed Sept. 10, 1935. 2 claims. (Cl. 229-87). An elongated paper sheath for wrapping friction tape.

2,105,981. Machine for applying mobile films. Peter J. Massey, William F. Thiele, and Bert F. Raprager, assignors of nine-tenths to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., and one-tenth to Peter J. Massey, Chicago, Ill. Filed Sept. 11, 1935. 18 claims. (Cl. 91-50). A coating machine for continuous coating of flexible webs.

2,105,982. Mobile film distributing mechanism. Peter Jay Massey, William F. Thiele, and Bert F. Raprager, assignors of nine-tenths to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., and one-tenth to Peter J. Massey, River Forest, Ill. Filed Dec. 20, 1935. 4 claims. (Cl. 91-50). Coating machine.

2,106,096. Art for the treatment of tissue paper. Grover C. Hoffman, New York, N. Y., assignor of one-half to Helene de Bourgogne, New York, N. Y. Filed Sept. 28, 1935. 2 claims. (Cl. 91-68). Paper is saturated with a solution of 2 parts of ethyl alcohol, 1 part of glycerol with 3 parts of water, containing 5.5 ounces of talcum powder in suspension in 6 gallons of solution and dried.

2,106,104. Cleaning roll. Peter J. Massey, William F. Thiele, and Bert F. Raprager, assignors of nine-tenths to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., and one-tenth to said Peter J. Massey (River Forest, Ill.). Filed Nov. 27, 1935. 7 claims. (Cl. 91-48). A stone roll to clean the surface of a coating roll.

2,106,111. Manufacture of alkali cellulose. Alfons Bayerl and Karl Koesslinger, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed Feb. 5, 1935. 6 claims. (Cl. 260-10). A cloud of caustic soda solution (40-50% of NaOH) on wet wood pulp, containing from 40 to 60 per cent of dry pulp, the ratio of caustic soda to dry pulp being less than 3:1.

JANUARY 25, 1938

2,106,164. Coated flexible sheet. Walter Durgin Bowlby, assignor to Egyptian Lacquer Manufacturing Company, Jersey City, N. J. Filed April 7, 1936. 20 claims. (Cl. 91-68). The lacquer film is composed of nitrostarch with a plasticizer equal to at least 20% of the weight of the nitrostarch.

2,106,215. Roll grinding machine. Edward Hutchens, assignor to Utility Manufacturing Company, Cudahy, Wis. Filed Dec. 15, 1934. 11 claims. (51-49).

2,106,246. Wadding. Charles A. Fourness, assignor to Paper Patents Company, Neenah, Wis. Filed Nov. 20, 1935. 7 claims. (Cl. 154-54). A plurality of plies of creped tissue superposed to form the desired wadding thickness and means of uniting said plies.

2,106,255. Envelope machine. Abraham Novick, assignor to F. L. Smithe Machine Co. Inc., New York, N. Y. Filed Nov. 29, 1932. 5 claims. (Cl. 93-61). Method of making window envelopes.

2,106,271. Stay-plaiting mechanism for blank-making machines. Robert M. Dallas, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed July 22, 1936. 11 claims. (Cl. 93-36).

2,106,339. Varnish and paper drying machine. Maxime J. Brizard, San Francisco, Calif. Filed Nov. 25, 1935. 4 claims. (Cl. 34-12). Means for conducting sheets of paper through the drier and over a vacuum box and for directing a current of air downwardly on the sheets.

2,106,426. Container and method of making the same. Helen G. Grant, Asheville, N. C. Filed June 23, 1937. 3 claims. (Cl. 93-1).

2,106,431. Manufacture of paper or like bag tubes or bags. Alfred James Jones, assignor to E. S. & A. Robinson, Limited, Bristol, England. Filed Aug. 15, 1934. 18 claims. (Cl. 93-18).

2,106,440. Apparatus for the forming of thick paper articles, such as barrels, tubs, plates, and the like. Ewen Ross Smith, Penig in Saxony, Germany. Filed May 3, 1934. 9 claims. (Cl. 92-60).

2,106,500. Duplex single facer. Henry B. Greenwood, assignor to F. X. Hooper Company, Inc., Glen Arm, Md. Filed Dec. 20,1935. 19 claims. (Cl. 154-31). A corrugating machine.

2,106,624. Roofing shingle. George I. Ray, Charlotte, N. C. Filed Aug. 17, 1936. 1 claim. (Cl. 108-8).

FEBRUARY 1, 1938

2,106,709. Paper and process for the manufacture of paper. Webster E. Byron Baker, Lock Haven, Pa. Filed April 4, 1933. 3 claims. (Cl. 91-68). There is applied to the paper an aqueous suspension of starch and finely divided water-insoluble, inorganic material (about 5% of each); the sheet is then dried and calendered.

2,106,738. Paper and analogous material container. John K. M. Harrison, Ogontz, Pa. Filed Dec. 19, 1935. 23 claims. (Cl. 93-55.1). A method of fabricating containers which comprises forcing heated tight-fitting closures into the end of a suitably-lined tube section.

2,106,739. Container bottom and top applying and sealing machine. John K. M. Harrison, Ogontz, Pa. Filed March 20, 1936. 10 claims. (Cl. 93-55.1). The combination of a stationary heater head having a hollow for the individual reception of the tube ends, an inner concentric peripherally-flanged heater holder, and an intervening disc having a tapering peripheral edge adapted to flare the tube edge.

2,106,740. Paper-bag machine attachment. William C. Hepke, assignor to Thomas M. Royal & Co., Philadelphia, Pa. Filed March 25, 1935. 14 claims. (Cl. 93-27). Means for effecting permanent engagement of the bottom turned or folded portions of paper bags.

2,106,797. Production of cellulose from lignocellulosic materials. Henry Dreyfus, London, England. Filed May 26, 1934. 5 claims. (Cl. 92-9). The use of an organic true solvent at an elevated temperature for about 20 minutes.

2,106,867. Laminated material. Charles V. Brady, assignor to Bemis Bro. Bag Co., St. Louis, Mo. Filed April 22, 1935. 1 claim. (Cl. 154-50). A combination of fabric and paper with chlorinated rubber material.

2,106,875. Seamed bag. William Wallace Rowe, assignor to Bemis Bro. Bag Co., St. Louis, Mo. Filed July 19, 1935. 12 claims. (Cl. 229-55).

2,107,042. Cigarette package. John H. MacMillan, Jr., Minneapolis, Minn. Filed March 5, 1936. 1 claim. (Cl. 229-16). A blank for use in forming a cigarette package.

2,107,043. Blank aligning mechanism and method. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Oct. 7, 1931. 9 claims. (Cl. 271-50). Mechanism for aligning blanks in an envelope making machine.

2,107,085. Method of making cardboard articles. Russel I. Rhodes, assignor to The Mason Box Company, Attleboro Falls, Mass. Filed Jan. 28, 1936. 6 claims. (Cl. 93-39). Sheet material is formed by superposing a plurality of sheets with adhesive therebetween to form composite sheet material, die-pressing at recurrent locations and separating the blanks.

2,107,096. Package and method of manufacture thereof. Albert Wesselman, Cincinnati, Ohio. Filed March 3, 1934. 7 claims. (Cl. 229-37). A carton blank.

2,107,249. Paper-bag-machine attachment. William C. Hepke, assignor to Thomas M. Royal & Co., Philadelphia, Pa. Filed March 25, 1935. 19 claims. (Cl. 154-42). The combination with a paper-bag-making machine having means for overlapping the longitudinal edges of a web of paper in the formation of a tube and heating means.

FEBRUARY 8, 1938

2,107,275. Drying equipment. William T. Anderson and James M. Henry, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed July 28, 1936. 3 claims. (Cl. 34-48). Apparatus for drying coated fabrics consisting of a long tunnel and means for circulating air.

2,107,276. Vertical coating equipment. William T. Anderson, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed July 28, 1936. 8 claims. (Cl. 91-53). The coating apparatus comprises a doctor knife, means for passing a fabric in a substantially horizontal direction before contact with the knife, and means for moving the said fabric in a substantially vertical direction after contact with the said knife.

2,107,287. Liquid degreasing composition. Alton F. Curran, assignor to The Curran Corporation, Malden, Mass. Filed Jan. 10, 1936. 5 claims. (Cl. 87-5). The composition contains "Tallol" soap (25-75%).

2,107,297. Bleaching fiber. Hans O. Kauffmann, assignor to Buffalo Electro-Chemical Company, Inc., Buffalo, N. Y. Filed March 8, 1934. 3 claims. (Cl. 8-2). Use of a high concentration of peroxide.

2,107,304. Process of impregnating fibrous materials. Izador J. Novak, assignor to Raybestos-Manhattan, Inc., Bridgeport, Conn. Filed June 27, 1934. 11 claims. (Cl. 92-40). The web is incompletely saturated, passed between pressure rolls and wound upon itself in the presence of an excess of the saturant expressed from the web, whereby to cause an interfelting of the adjacent plies.

2,107,343. Process of treating paper. Chester D. Rockwood and Kenneth L. Osmun, assignors to The Union Selling Company, Cincinnati, Ohio. Filed April 14, 1936. 5 claims. (Cl. 8-20). A parchment-like effect is produced by passing paper through a solution of zinc chloride in 40% formaldehyde.

2,107,390. Apparatus for the method of agitating pulp stock. John A. Rosmait, Manistee, Mich. Filed Dec. 13, 1935. 9 claims. (Cl. 92-37). A pump arranged to discharge pulp from the bottom of a storage chest to the top.

2,107,430. Corrugated paperboard making machine. George W. Swift, Jr., assignor to George W. Swift, Jr., Inc., Bordentown, N. J. Filed April 16, 1935. 1 claim. (Cl. 154-30). A corrugated paper double-backing machine.

2,107,482. Wrapping or packing machine. William Joseph Kemp, assignor to Molins Machine Company, Limited, London, England. Filed June 25, 1935. 20 claims. (Cl. 93-2).

2,107,485. Process and apparatus for adhesively uniting plies of fabric material. Benjamin Liebowitz, assignor to Trubenizing Process Corporation, New York, N. Y. Filed July 11, 1936. 3 claims. (Cl. 154-1).

2,107,587. Forming of paperboards. Ewen Ross Smith, assignor to Papercrete Limited, London, England. Filed Aug. 19, 1935. 3 claims. (Cl. 92-61).

2,107,719. Woven wire fabrics. Ferdinand Steinhart, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio. Filed Aug. 22, 1936. 11 claims. (Cl. 245-10). Method of uniting the ends of twill weave woven wire fabrics.

2,107,748. Ornamental product. Adolph H. Cohen, assignor to Edward Karfiol, Great Neck, N. Y., and Louis A. Voltter, New York, N. Y. Filed July 15, 1937. 12 claims. (Cl. 41-10). An ornamental edging for selving formed of paper laminated to regenerated cellulose.

2,107,779. Method and apparatus for producing felted fiber insulation. William Brown, Detroit, Mich. Filed Feb. 19, 1934. 23 claims. (Cl. 92-58). Method of molding insulation forms.

2,107,812. Suction roll. Earl E. Berry, Lloyd Hornbostel, and John E. Goodwillie, assignors to Beloit Iron Works, Beloit, Wis. Filed April 25, 1935. 15 claims. (Cl. 92-53). A perforated shell, a suction box and a sound trap at the offgoing side of the suction box for reducing the sound caused by the breaking of the vacuum in said perforations.

FEBRUARY 15, 1938

2,108,116. Paper making machine. Henry Street Furminger, Appleton, Wis. Filed May 4, 1936. 4 claims. (Cl. 92-39). The combination of Fourdrinier forming sections with a cylinder mold enabling the formation of a composite web devoid of two-sidedness.

2,108,125. Cellulose products and method of making. Samuel Isaac Hoddeson and Roy Mackay Meiklejohn, assignors to General Chemical Company, New York, N. Y. Filed Dec. 5, 1935. 11 claims. (Cl. 260-146). Mercerized cellulose is subjected to a dilute alkaline solution having an alkalinity equal to at least 0.25% of caustic alkali at 150° to 200° C. for 3 to 24 hours.

2,108,148. Method of making handled shopping bags. Harford K. Steen, Newburgh, N. Y. Filed Nov. 2, 1936. 5 claims. (Cl. 93-35).

2,108,189. Sizing vat. Nelson Allen Batchelder, Welland, Ontario, Canada. Filed Oct. 26, 1936. 7 claims. (Cl. 8-19). A plurality of dipping rolls in a sizing vat, means for raising and lowering the rolls and squeezing rolls in said vat arranged in pairs alternating with the dipping rolls.

2,108,190. Dyeing machine. Nelson Allen Batchelder, Welland, Ontario, Canada. Filed Oct. 26, 1936. 3 claims. (Cl. 8-19). A dyeing and treating vat, with guide, feed and tensioning rolls.

2,108,231. Method of making paper. William C. Nash, Neenah, Wis. Filed March 14, 1935. 2 claims. (Cl. 92-39). A method of forming a web consisting of a lower relatively thick layer of kapok fibers and an upper relatively thin layer of other fibers.

2,108,232. Web guiding device. William C.

Nash, Neenah, Wis., assignor of one-fifth each to Mary Jones and Marie Duval Nash, Neenah, Wis., William M. Nash, Chicago, Ill., and Roy A. Nash, New Rochelle, N. Y. Filed May 1, 1935. 3 claims. (Cl. 242-76). Device for automatically maintaining the lateral edge of a continuously advancing flexible web in substantially constant alignment.

2,108,310. Roll grinding machine. Herbert J. Griffing, assignor to Norton Company, Worcester, Mass. Filed Dec. 20, 1935. 14 claims. (Cl. 51-95).

2,108,318. Cover feeding and folding mechanism for booking machines. John R. Nolan, assignor to The Diamond Match Company, Wilmington, Del. Filed Sept. 19, 1936. 12 claims. (Cl. 93-2).

2,108,334. Box making apparatus. Charles G. Hayes, assignor to Chicago Carton Company, Chicago, Ill. Filed June 29, 1936. 3 claims. (Cl. 93-52).

2,108,387. Viscous, waterproof and insulating composition with a basis of rubber, to be used hot or cold. Nelio Nardelli, Florence, Italy. Filed Dec. 14, 1934. 5 claims. (Cl. 106-23). Melted rubber, 75-95%, colophony, 25-5%.

2,108,455. Process for rendering a textile material resistant to moisture. Herbert G. Stone and Carl J. Malm, assignors to Eastman Kodak Company, Jersey City, N. J. Filed March 31, 1934. 6 claims. (Cl. 91-68). The material is thoroughly wetted with a substantially neutral aqueous solution of a water-soluble salt of a cellulose ester containing a dicarboxylic acid radical and the cellulose ester is then regenerated.

2,108,645. Manufacture of flexible abrasive articles. Robert C. Bryant, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed March 19, 1933. 8 claims. (Cl. 91-68. Method of manufacturing intermittently coated abrasive fabric.

2,108,682. Insulating material. Frank R. Leslie, St. Paul, Minn. Filed Dec. 4, 1936. 2 claims. (Cl. 154-44).

2,108,761. Fire resistant pulp board. Hubert L. Becher, assignor to Homasote Company, Trenton, N. J. Filed March 28, 1936. 12 claims. (Cl. 92-21). Cellulose fibers coated with aluminum hydrate and mixed with a substantial proportion of fuller's earth and exfoliated vermiculite.

2,108,768. Coating composition. Ernst Helft, assignor to American Hyalsol Corporation, Wilmington, Del. Filed Feb. 1, 1933. 3 claims. (Cl. 134-79). Nitrocellulose, ethyl acetate, pulverulent material and a small proportion of dodecyl alcohol.

FEBRUARY 22, 1938

R20,660. Method of coating and apparatus therefor and product. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Original No. 2,027,307, dated Jan. 7, 1936. Application for reissue Dec. 27, 1937. 45 claims. (Cl. 91-68).

2,108,804. Moistureproof material and process of making same. Theron G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 29, 1934. 11 claims. (Cl. 91-70). Highly calendered paper is impregnated with a moistureproofing and transparentizing lacquer, and the solvents are evaporated at a temperature sufficient to cause the solids in the lacquer to automatically hot flow and fill the voids.

2,108,805. Transparent materials and method of producing same. Theron G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 4, 1934. 6 claims. (Cl. 91-68). A transparent wrapping tissue is prepared by calendering a thin porous sulphite tissue, passing it through a 8 to 12% solution of paraffin wax in toluene, removing the toluene and passing the treated sheet through a lacquer consisting of 62.5% of half-second nitrocellulose and 37.5% of tricresyl phosphate, after which the laquer solvent is evaporated.

2,108,806. Cellulose materials and method of treating same. Theron G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 26, 1934. 9 claims. (Cl. 91-68). Process for transparentizing paper, consisting in impregnating the paper with a water-soluble soap and a liquid vehicle, removing the liquid whereby the soap is distributed throughout the paper, to render the latter more absorptive for transparentizing impregnants, and impregnating the paper with a transparentizing composition.

2,108,807. Transparent material and method of making same. Thereon G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 26, 1934. 20 claims. (Cl. 91-68). A highly calendered paper containing a wetting agent distributed throughout its mass and impregnated with a composition free of cellulose derivatives and comprising a resin in proportions which transparentizes said paper.

2,108,808. Transparent materials and method of making same. Thereon G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 26, 1934. 17 claims. (Cl. 91-68). A transparent moistureproof material comprising paper containing a wetting agent and having its voids and spaces substantially filled with a water-soluble impregnant and thinly coated with a transparent moistureproofing composition.

2,108,809. Moistureproofing materials and method of making the same. Theron G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 26, 1934. 19 claims. (Cl. 91-70). A thin porous paper is impregnated with a wetting agent, calendered, and impregnated with a moistureproofing composition (waxes and blending agents), the paper being rapidly chilled at some stage in the process, whereby a transparent, moistureproof and flexible product is obtained.

2,108,810. Transparent material and composition of matter for producing the same. Theron G. Finzel and Donald E. Drew, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 26, 1934. 32 claims. (Cl. 91-68). A lacquer containing a moistureproofing waxy substance and a substance selected from the class which consists of glycols and glycol derivatives, for softening said cellulose material.

2,108,910. Method of preparing fiber containers. Charles T. Walter, assignor to Industrial Patents Corporation, Chicago, Ill. Filed Nov. 21, 1936. 3 claims. (Cl. 93-36.5). The marginal end rolls are treated with a congealable thermoplastic compound hard and elastic at temperatures approximately 185° F. and below, and the compound is hardened.

2,109,088. Machine for cutting, embossing, and printing sheets of paper and cardboard. Salomon Levin, Lille, France. Filed Nov. 3, 1936. 4 claims. (Cl. 101-297).

2,109,359. Box-making machine. George Seifert, Beverly Hills Township, Los Angeles County, Calif. Filed Feb. 15, 1937. 9 claims. (Cl. 93-42).

MARCH 1, 1938

2,109,471. Adhesive. Richard Gurley Drew, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed June 16, 1926. 1 claim. (Cl. 134-23.1). Glue, glycerine and calcium chloride are used with a normal pressure sensitive sheeted binder coating.

2,109,532. Manufacture of asbestos-cement sheets. Nowl Arthur Hill, assignor to James Hardie & Co. Pty. Limited, Sydney, Australia. Filed June 19, 1937. 5 claims. (Cl. 92-41). Laminated aerated asbestos cement sheets.

2,109,558. Sheet material and articles made therefrom. Harry F. Waters, New York, N. Y., assignor of a joint equal interest to V. N. Barrington, New York, N. Y. Filed July 5, 1934. 3 claims. (Cl. 91-68). A sheet of regenerated cellulose and a fibrous reinforcing element impregnated with a metallic powder stiffening medium.

2,109,647. Apparatus for coating surfaces. Mortimer S. North, Evanston, Ill. Filed Nov. 6, 1935. 17 claims. (Cl. 91-18). Method of coating paper with viscous liquid material.

2,109,749. Moistureproofing. Francis P. McColl, by Mary Pamelia McColl, executrix, St. Andrews, New Brunswick, Canada. Filed Dec. 3, 1934. 7 claims. (Cl. 229-3.5). A paper receptacle having a section of moistureproof lining paper.

2,109,931. Paper sizing. James Carl Schmidt, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Aug. 28, 1935. 11 claims. (Cl. 92-21). Size is precipitated on paper pulp with an acidic precipitant, the acidity is neutralized and the pulp is mixed with a water slurry of alkaline filler, treated with size comprising plasticized resin insensitive to the alkalinity of the filler.

2,109,944. Paper sizing. Louis Leonard Larson, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Aug. 28, 1935. 2 claims. (Cl. 92-21). An emulsion of oil-plasticized resin is added to a water slurry of calcium carbonate and used for sizing pulp.

2,109,955. Paper cake plate. John H. Carson, Marion, Ind. Filed April 7, 1937. 4 claims. (Cl. 65-15).

2,110,032. Process of treating wood-pulp and the like. Harrison R. Williams, assignor to International Paper Company, New York, N. Y. Filed May 24, 1926. 12 claims. (Cl. 154-2).

MARCH 8, 1938

R20,667. Art of ply paper or board manufacture. John W. Sale, assignor to Hummel-Ross Fibre Corporation, Hopewell, Va. Original No. 2,018,382, dated Oct. 22, 1935. Application for reissue Aug. 18, 1937. 13 claims. (Cl. 92-39).

2,110,307. Box manufacture. Frank Rodgers Neely, Allentown, Pa. Filed June 26, 1935. 12 claims. (Cl. 93-43).

2,110,368. Folding machine. George Lautzenheiser, assignor to Amos Neuhauser, Bluffton, Ind. Filed Jan. 31, 1936. 4 claims. (Cl. 93-51). Machine for folding boxes having foldable side walls and collapsible corner sections integral with said walls.

2,110,423. Box forming machine. Walter E. Pope, Port Dickinson, N. Y. Filed Oct. 10, 1936. 5 claims. (Cl. 93-36).

2,110,478. Carton making machine. Dennis Wood, Stanmore, England. Filed Nov. 16, 1936. 4 claims. (Cl. 93-79). Machine for making frustoconical cartons.

2,110,479. Carton bottoming machine. Dennis Wood, Stanmore, England. Filed Nov. 16, 1936. 5 claims. (Cl. 93-55.1).

2,110,492. Automobile insulation. Charles A. Upson, assignor to The Upson Company, Lockport, N. Y. Filed Aug. 6, 1931. 4 claims. (Cl. 154-44). Two layers of flexible felt paper.

2,110,539. Waterproofed fabric and coating mixture therefor. Albert J. Weiss, assignor to Vulcan Proofing Company, New York, N. Y. Filed Nov. 7, 1935. 3 claims. (Cl. 134-17). A coating composition comprising rubber, shellac, chlorinated rubber and a plasticizer.

2,110,545. Treatment of cellulosic materials. Henry Dreyfus, London, England. Filed April 19, 1935. 5 claims. (Cl. 92-9). Use of nitric acid, followed by a two-stage alkaline treatment.

2,110,546. Production of cellulose and cellulosic products. Henry Dreyfus, London, England. Filed April 19, 1935. 1 claim. (Cl. 92-9). Use of nitric acid, followed by boiling with 3% of caustic soda.

2,110,579. Roofing strip. William B. Robinson, assignor to William B. Robinson Corporation, Sayville, N. Y. Filed July 18, 1935. 8 claims. (Cl. 108-8).

2,110,649. Continuous bleaching process. Ehrhart Franz, Leipzig, Germany. Filed Feb. 23, 1934. 12 claims. (Cl. 8-2). Use of hydrogen peroxide.

2,110,750. Preparation of containers. Charles T. Walter, assignor to Industrial Patents Corporation, Chicago, Ill. Filed Nov. 6, 1936. 5 claims. (Cl. 93-36.5). A bead of plastic material, hard and elastic at temperatures approximately 185° F. and below, is applied to the flange.

2,110,757. Log scaler. Joseph Charles Clarke. Pine Falls, Manitoba, Canada. Filed May 18, 1934. 1 claim. (Cl. 33-142).

2,110,770. Machine for and method of making paper cups. Louis V. Lucia, assignor to Lucup Corporation, Brooklyn, N. Y. Filed Nov. 8, 1935. 27 claims. (Cl. 93-36.05).

2,110,782. Container and method of making same. Isadore H. Weber, assignor to David Weber & Co., Philadelphia, Pa. Filed April 12, 1937. 7 claims. (Cl. 93-45).

2,110,814. Roll wrapping machine. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed March 20, 1935. 12 claims. (Cl. 93-2).

2,110,815. Roll wrapping machine. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed March 25, 1936. 19 claims. (Cl. 93-2).

MARCH 15, 1938

2,110,938. Coating apparatus. William H. Nutt, assignor to United Shoe Machinery Corporation, Paterson, N. J. Filed Aug. 22, 1935. 21 claims. (Cl. 12-80).

2,110,939. Machine for manufacturing bags. Gustaf Oerstroem, assignor to Aktiebolaget Gerh. Arehns Mekaniska Verkstad, Stockholm, Sweden. Filed June 30, 1936. 3 claims. (Cl. 93-12).

2,111,058. Sheet material. Herbert A. Winklemann, assignor to Marbon Corporation, Chicago, Ill. Filed Sept. 8, 1936. 6 claims. (Cl. 91-70). Paper sheet is impregnated with a mixture comprising a rubber hydrochloride, magnesium oxide and a volatile solvent for the rubber hydrochloride and calendered.

2,111,089. Paper manufacture. Henry P. Carruth, assignor to K. C. M. Company, Dayton, Ohio. Filed Dec. 18, 1933. 14 claims. (Cl. 92-40). A sheet of paper having upon one surface a light weight coating of finely divided mineral material, the opposite side being substantially free of coating, the coating being incorporated upon the sheet while wet and on the wire side thereof.

2,111,131. Sodium silicate adhesives. Arthur S. Weygandt, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Feb. 29, 1936. 7 claims. (Cl. 134-23.92). The sodium silicate contains 0.1 to 1.0% by weight of zinc oxide.

2,111,157. Method of forming boxes. John S. Stokes, assignor to Stokes and Smith Company, Summerdale, Pa. Filed Aug. 21, 1935. 20 claims. (Cl. 93-43).

2,111,194. Method of producing hypochlorous acid solution. Pedro Sanchez, Habana, Cuba. Filed Jan. 12, 1934. 3 claims. (Cl. 23-152).

2,111,204. Water-resistant composition of matter. George V. Caesar, assignor to Stein, Hall & Company, Inc., New York, N. Y. Filed Feb. 3, 1936. 7 claims. (Cl. 134-23.4). An amylaceous material and a water-soluble chromium salt.

2,111,205. Composite sheet article. John B. Catlin, assignor to Paper Patents Company, Neenah, Wis. Filed Jan. 6, 1936. 6 claims. (Cl. 36-68). A shoe counter comprising a ply of fiber board secured to a ply of rubber-impregnated cellulosic material having a relatively high flexibility and resilience.

2,111,219. Automotive vehicle dash heat and sound insulation. William N. Mayo, assignor to Zonolite Corporation of Michigan, Detroit,

Mich. Filed March 6, 1936. 2 claims. (Cl. 154-44). An inner layer of a limp non-self-sustaining fibrous material forming a sound insulator and a rigidifying coating on one or both faces of comminuted exfoliated vermiculite, with a binder.

2,111,259. Method of refining tall oil. Helmer L. Biengsli, New York, N. Y. Filed Dec. 26, 1934. 8 claims. (Cl. 87-2). The crude tall oil is oxidized to render the coloring material insoluble in gasoline and the tall oil is then extracted with gasoline and recovered by distillation.

2,111,317. Rotary gumming attachment for envelope folding machines of the plunger type. Omer G. Dreher and Charles T. Arnold, assignors to The American Envelope Company, West Carrollton, Ohio. Filed Nov. 3, 1934. 6 claims. (Cl.93-62).

2,111,440. Paper machine distributing apparatus. Jerome P. Strasser, assignor to Stein, Hall Manufacturing Company, Chicago, Ill. Filed Dec. 9, 1937. 4 claims. (Cl. 92-40). A means for distributing materials to a point on the wire of the paper machine.

2,111,474. Manufacture of boxes. Andrew Mathis Kamper, assignor to No-Nail Cases Proprietary Limited, London, England. Filed Aug. 28, 1936. 6 claims. (Cl. 229-23).

MARCH 22, 1938

2,111,565. Method of surfacing roofing material. Charles T. Limerick, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed Nov. 23, 1933. 5 claims. (Cl. 91-68).

2,111,698. Process of preparing hydrophobic cellulose fibers. Fritz Siefert and Joseph Ctadler, assignors to I. G. Farbenindustrie Aktiengesellschaft. Frankfort-on-the-Main, Germany. Filed Sept. 24, 1936. 4 claims. (Cl. 91-70). Fibers are impregnated with water-soluble salts of amines containing at least one aliphatic or cycloaliphatic radical and being capable of reacting with aldehydes, a low molecular compound containing several amino groups and an aliphatic aldehyde and heated after the impregnating process.

2,111,700. Box forming and wrapping system. John S. Stokes, assignor to Stokes and Smith Company, Summerdale, Pa. Filed Aug. 21, 1935. 8 claims. (Cl. 93-40).

2,111,798. Shingle. Stuart P. Miller and Marston L. Hamlin, assignors to The Barrett Company, New York, N. Y. Filed April 9, 1936. 7 claims. (Cl. 108-7).

2,111,833. Table roll structure for paper machines. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed Dec. 23, 1935. 9 claims. (Cl. 92-44). A method of supporting a forming wire with small-diameter table rolls.

2,111,834. Process and apparatus for drying fibrous webs. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed Jan. 2, 1936. 13 claims. (Cl. 92-49). A wet web is conveyed on an absorbent carrier, the web is removed from the carrier, liquid is sucked from the carrier alone, the web is recontacted with the carrier while the same is still subjected to suction and the web is squeezed to force liquid therefrom for absorption into the carrier.

2,111,835. Paper machine table roll structure. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed May 20, 1936. 8 claims. (Cl. 92-51).

2,111,853. Cord coating machine. Charles A. Fourness and John M. Graef, assignors to International Cellucotton Products Company, Chicago, Ill. Filed July 24, 1936. 5 claims. (Cl. 91-32).

2,111,865. Coating apparatus. Wilbur L. MacKenzie, assignor to United Shoe Machinery Corporation, Paterson, N. J. Filed Dec. 28, 1934. 17 claims. (Cl. 91-43).

2,111,933. Method for treating fibrous materials. Edward F. King, Cranston, R. I. Filed Oct. 26, 1935. 12 claims. (Cl. 91-68). Rubber particles are deposited from an aqueous dispersion of relatively high concentration to a predetermined depth within a sheet of fibrous material from one side thereof.

2,112,023. Preparation of materials for embossing. Harry J. Hosking and Alexander R. Bradie, said Hosking assignor to Foster D. Snell, Inc., Brooklyn, N. Y. Filed Feb. 13, 1935. 19 claims. (Cl. 91-68). Method of conditioning to the proper moisture content, applying a coating mixture, drying, calendering and passing through a conditioning liquid.

2,112,115. Conditioning of sheeted cellulose pulp for acetylation and the like. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed April 4, 1936. 17 claims. (Cl. 260-101). The process comprises humidifying substantially only the surface of a predried sheet whose surface is practically dehydrated and redrying under temperature and other conditions controlled to avoid substantially complete surface dehydration.

2,112,116. Production of cellulose of low solution viscosity for conversion into cellulose derivatives. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed May 2, 1936. 18 claims. (Cl. 260-101). The product is treated with at least a 0.75% hydrogen peroxide solution under controlled conditions and dried in the presence of the hydrogen peroxide.

2,112,121. Method and machine for making locked corner boxes. Melvin H. Sidebotham, assignor to Specialty Automatic Machine Company, Medford, Mass. Filed June 3, 1936. 19 claims. (Cl. 93-49).

2,112,194. Roofing and siding material. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed April 30, 1935. 12 claims. (Cl. 108-7).

MARCH 29, 1938

2,112,245. Process of hardening cellulose matter and resulting products. Christopher Luckhaupt, Jamaica, N. Y. Filed April 23, 1936. 6 claims. (Cl. 91-70). Material is treated with terpin hydrate at or above its melting point.

2,112,246. Sheet coating machine. William W. Maher, assignor to American Can Company, New York, N. Y. Filed July 6, 1936. 9 claims. (Cl. 91-50).

2,112,357. Process of making calcium sulphate-zinc sulphide pigments. Keith H. Butler, Rodolphe A. Gagnon, and James D. Prince, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 27, 1935. 11 claims. (Cl. 134-78). Calcium hydrosulphide and zinc sulphate solutions are mixed.

2,112,394. Manufacture of sheaths, particularly cigarette paper sheaths. Henri Chambon, assignor to Société Anonyme des Anciens Etablissements L. Chambon, Paris, France. Filed June 30, 1936. 18 claims. (Cl. 93-2).

2,112,517. Process of making leather-rubber material. Donald E. Cable, assignor to United States Rubber Company, New York, N. Y. Filed Oct. 10, 1933. 3 claims. (Cl. 92-21). The leather fibers are impregnated with a solution containing multivalent cations and then mixed with an aqueous dispersion of rubber.

2,112,523. Container and method of making the same. Adrian O. Daller, assignor to Utility Packages, Inc., a corporation of New York. Filed March 16, 1934. 4 claims. (Cl. 229-87).

2,112,540. Art of paper making. Frank J. McAndrews and Lester Long, assignors to Charles McDowell, trading as McDowell Paper Mills, Philadelphia, Pa. Filed Oct. 1, 1937. 3 claims. (Cl. 92-40). Method of making glassine, greaseproof or imitation parchment paper containing modifying materials uniformly distributed throughout its entire cross section.

2,112,544. Laminated article. Harold D. Rice, assignor to United States Rubber Products, Inc., New York, N. Y. Filed Sept. 26, 1935. 8 claims. (Cl. 154-54.5). The base material is coated with a synthetic rubber-like polymer having high resistance to swelling with an intermediate layer composed of the solids from a rubber latex emulsion.

2,112,562. Process of deinking paper. Harry C. Fisher, assignor to The Gardner-Richardson Company, Middletown, Ohio. Filed Aug. 20, 1934. 12 claims. (Cl. 92-9). A material generally similar to the oily vehicle of the original printing ink is used as the deinking agent.

2,112,732. Impregnated material. Hermann C. Burmeister, assignor to General Electric Company, Schenectady, N. Y. Filed Aug. 21, 1935. 3 claims. (Cl. 154-2.6). Fibrous sheet material coated and partly impregnated with an insoluble and infusible resin.

2,112,756. Manufacture of safety paper. Viktor T. Bausch and Adolf Schroth, assignors to Felix Schoeller & Bausch, Mecklenburg, Germany. Filed June 23, 1936. 8 claims. (Cl. 91-67.95). Paper is impregnated with manganous tellurite, barium tellurite, mercury-I-tunstate or an alkali selenite, which upon reduction forms a substance with a different color from the original salt.

Review Of The Paper Industry Literature

Abstracts Compiled By the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson and Clarence J. West, Chairman of the Committee.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Machinery

Device for the Diminution of Substances, Especially for Refining of Paper Stock. Deutsche Carborundumwerke G.m.b.H., Dusseldorf, Ger. pat. 644,674 (June 19, 1934).—The plug of a jordan and also the shell is lined with an artificial granular material. The size of the granules is arranged according to the results desired and is different along the plug and shell.—J. F. O.

Suction Roll for Paper Machines. J. Boltersdorf. Ger. pat. 644,472 (May 20, 1936).—A paddle wheel revolves within the suction roll casing and thus acts as a suction pump.—J. F. O.

Roll Press for Paper Machines. Maschinenfabrik Banning & Seybold A.G., Duren. Ger. pat. 646,438 (Nov. 19, 1935).—Arrangement for regulating the gloss desired through the roll press.—J. F. O.

Modern Drives for Smoothing Cylinders. F. Schiller. Zellstoff u. Papier 17, no. 7: 303-06 (July, 1937).—The author describes the drives for smoothing cylinders made by Siemens Schuckert. Many illustrations accompany the article.—J. F. O.

Method for Preventing Damage to the Cylinders and Other Parts of the Machine in the Manufacture of Paper. W. Stegemann. Ger. pat. 646,100 (Jan. 12, 1935).—By the invention, damage done by particles in the paper such as clay, sizing, etc., will not leave the sheet of paper and form incrustants on the hot drying cylinders, guide rolls, dryer felts and calender rolls.—J. F. O.

Method for Putting On and Taking Off Elastic Coverings on Cylindrical or Prismatical Objects, Especially Rolls. H. Rothe. Ger. pat. 645,917 (April 16, 1936).—The object to be covered is surrounded with an object of similar shape and slightly larger size. Compressed air is used to inflate the covering which is provided with a valve at the necessary end.—J. F. O.

Arrangement for Cleaning Rolls, Especially on a Paper Machine. Rohrbacher Lederfabrik Jos. Poeschls Sohne A.G. Aust. pat. 149,505 (Dec. 15, 1936).—Instead of making the doctor blades out of wood, steel and other materials, leather is successfully used.—J. F. O.

Measuring Instruments for Wood Pulp Suspensions. Wochbl. Papierfabr. 68, no. 14:267; no. 17: 322 (April 3, 24, 1937); B.I.P.C. 8: 65.—The inquirer asks for an accurate measuring instrument for wood pulp at a consistency of 4 per cent, similar in construction to a Venturi meter. Special instruments for this purpose have not yet been developed. In the answer, reference is made to the eventual suitability of the Drautz flow meter; when the consistency is kept constant, the Trimbey regulator should also be suitable. The accuracy of all such measuring instruments will depend upon the consistency, its uniformity, the place of installation, and method of charging.—C.J.W.

Arrangement for Regulating the Consistency of Fiberous or Thick Fluid Materials, Especially Paper Stock. Siemens Schuckertwerke A. G., Berlin. Ger. pat. 644,471 (May 11, 1935).—The invention uses the moment of rotation of the stock for regulating the consistency.—J. F. O.

The Advantages of a Continuous Weight and Thickness Control in the Production of Hand-made Board. Eberhard O. Mueller. Wochbl. Papierfabr. 68, no. 39: 735-37 (Sept. 25, 1937).—A system of taking weight and thickness tests on the wet board is advocated from which results the dry board can be estimated.—J. F. O.

Method for Regulating the Consistency of Stock. Fa. J. M. Voith. Aust. pat. 147,692 (July 15, 1936). A determined constant quantity of water is removed from the stock which makes it possible to correct the consistency more easily.—J. F. O.

The Suction Couch and the Suction Wet Presses. Friedrich Muller. Wochbl. Papier-Fabr. 68, Special Number; 19-24 (July 2, 1937).—The types of suction couches discussed are: the suction couch with perforated casing and built-in suction box, the suction couch with suction cell roll, the Banning Seybold suction cell roll, and the Voith suction cell roll; the advantages and disadvantages of each type given, the power consumption, and the performance. The suction wet presses are also discussed together with their drying performance and the steam consumption per pound of paper.—J. F. O.

Fourdrinier Paper Machine. Ronald A. Taylor Can. pat. 367,866 (Aug. 3, 1937).—A squirt movable across the fourdrinier wire is automatically operated to form a lead strip when the paper breaks on the machine.—A.P.-C.

Save-alls. P. Wiesenthal. Zellstoff U. Papier 17, no. 7: 298-302 (July, 1937).—The author discusses various makes of save-alls, in such a manner to avoid stating advantages or disadvantages or capacities. Different types of funnel-shaped save-alls, thickeners, Adka Save-all and Buckau are illustrated and described.—J. F. O.

Process and Device for the Regulation of the Action of a Save-all Cylinder and Similar Apparatus. Deutsche Prioritat. H. Kurtz. Finn. pat. 17,412. A float is used to regulate the speed of rotation of the save-all cylinder.—J. F. O.

Screens. The Watford Engineering Works, Ltd., and Ernest E. Bray. Brit. pat. 464,158 (April 13, 1937).—In paper and pulp screens that have a strainer surface formed by a series of parallel rolls at slight distances apart each roll is formed with annular peripheral projections that extend into annular grooves in the adjacent roll.—A.P.-C.

Considerations and Experiences in the Construction of Modern High Speed Cutters. Papier-Ztg. 62, no. 67/68: 1134-1136, 1138; no. 69: 1175-1177 (Aug. 21, 28, 1937).—A discussion of certain fundamental principles and details of construction for obtaining satisfactory operation of high speed cutters. —C.J.W.

Paper Machine Slitter Knife. Albert J. Thibedeau. U.S. pat. 2,092,862 (Sept. 14, 1937).—Adjustment of the knives to operative or inoperative position is effected electrically under remote control. (Cl. 164-60).—A.P.-C.

Slitting and Winding Machine. John J. Kittel. U.S. pat. 2,090,130 (Aug. 17, 1937).—The patent provides a differential tension regulator by means of which the web tension is maintained constant, which permits of obtaining wound rolls of substantially uniform compactness and which prevents "locking" action when the wound and unwound rolls are of approximately equal diameters. (Cl. 242-66).—A.P.-C.

The Handling of Oblique Cutting. Franz Hieger. Wochbl. Papier-Fabr., 68, no. 25: 467-68 (June 19, 1937).—By means of mathematical formulae, the author discusses the best manner of handling oblique cutting.—J. F. O.

Construction and Operation of the Latest German High Capacity Revolving Cutters. Gerald Strecker. Zellstoff u. Papier 17, no. 7: 306-09; no. 8: 356-59 (July, August, 1937).—Detailed description of the introduction and progress of the construction of a German revolving cutter, together with its operation.—J. F. O.

Electrical Drive for Re-winder With Carry Rolls. C. G. Haubold. Aust. pat. 147,035 (May 15, 1936).—J. F. O.

Arrangement for Shaking the Wire Section. Firma J. M. Voith, Heidenheim. Ger. pat. 643,009 (May 3, 1933).—J.F.O.

Shaking Paper Machine Wires. E. Alexander Charlton, assignor to International Paper Co. U.S. pat. 2,092,798 (Sept. 14, 1937).—Shaking or vibration of the wire is produced by means of one or more rapidly rotating rolls with suitably disposed raised ribs, which contact the under side of the wire. The rolls may be driven together or independently. (Cl. 92-45).—A.P.-C.

Woven Wire Belt for Paper Making Machines. Harry G. Specht, assignor to Encor Corp. U. S. pats. 2,088,447 to 2,088,449 (July 27, 1937).—*No. 2,088,447*—The shoot or weft wires are in the form of pairs of circular cross-section wires arranged side by side. *No. 2,088,448*—The shoot or weft wires are of flat (rectangular or oval) cross-section. *No. 2,088,449*—The shoot or weft wires are in the form of a twisted wire which, due to the twisted strands from which the wire is formed, are slightly crushed at the knuckles but maintain their normal cross-section between the knuckles. (Cl. 245-8).—A.P.-C.

Screen Plate for Materials Containing Wood Fibers in the Manufacture of Ground Wood, Cellulose, Paper and Similar Materials. E. A. Lie. Aus. pat. 149,574 (Jan. 15, 1937).—The screen plate is made of aluminum or an aluminum alloy and is artificially oxidized, that is, with an artificially prepared covering of aluminum oxide or aluminum hy-

droxide. Increased capacity of the screen results because the fibers will glide over the smoother surface of the aluminum plates.—J. F. O.

Resurfacing Machine for Suction Box Covers. John A. Borck, assignor to Eastwood-Neally Corp. U.S. pat. 2,088,402 (July 27, 1937).—The machine comprises a frame or stand in which the suction box is supported, and a motor-driven grinding wheel which can be displaced along the frame. The position of the wheel can be adjusted to regulate the depth of grinding. Water jets are provided to cool the suction box cover and prevent it burning. (Cl. 51-34).—A.P.-C.

Suction Apparatus for Paper Machines. Arthur E. Broughton, Brit. pat. 463,904 (April 8, 1937).—The suction boxes of each of several paper machines are served by a common suction pump through separate conduits each including an automatic valve that shuts off its machine from the pump if the suction of any box of its machine gives out, as on a break in the sheet occurring.—A.P.-C.

Horizontal Screen for Ground Wood, Pulp and Similar Materials. Firma J. M. Voith, Heidenheim. Ger. pat. 642,992 (May 1, 1934).—Means of regulating the height of stock in the screen by a specially devised exit gate.—J. F. O.

Screen for Fibrous Material, Especially for Material for the Manufacture of Paper. Miag Muhlenbau und Industrie Aktiengesellschaft, Braunschweig. Finn. pat. 17,339 (March 26, 1935).—A device is used to push the coarse material away from the acceptable material—J. F. O.

Screen for Materials Containing Fiber, Especially for Stock Used in the Manufacture of Paper. Miag Muhlenbau & Industrie Akt. Ges., Braunschweig. Aust. pat. 147,681 (July 15, 1936). Method for removal of the coarse fibers.—J. F. O.

Process and Device for Screening Wood Chips for the Manufacture of Pulp. I. O. Marland. Swed. pat. 88,168 (Oct. 9, 1933).—The chips pass through an horizontal screen drum and drop into a hopper which feeds to a screw conveyor—J. F. O.

"Flow Through" Screen with Horizontal Centrifugal Shaft for Ground Wood Pulp and Similar Substances. Firma J. M. Voith, St. Polten. Aust. pat. 149,575 (Jan. 15, 1937).—J. F. O.

Method of Joining the Ends of a Fourdrinier Wire Fabric. The Niagara Wire Weaving Co., Ltd. Brit. pat. 463,760 (April 6, 1937).—The ends are joined by interposing a metal strand between the extremities of the end warp wires and joining it thereto by heat.—A.P.-C.

Process and Arrangement for the Manufacture of an Endless Wire Web. A. G. der Fezfabriken, Strakonice. Aust. pat. 148,868 (Nov. 15, 1936).—J.F.O.

Relationship Between the Width of the Paper Web and the Width of the Wire. Pappen-u. Holzstoff-Ztg. 44, no. 39:419-420 (Sept. 24, 1937); B. I. P. C. 8:105.—Paper mills producing a large variety of papers cannot always utilize the full width of their paper machines; news print or kraft paper mills for mass production have the advantage of uniform products throughout the year and changes are hardly ever necessary. Varying widths of the web are regulated by the deckles straps; paper, however, shrinks in the cross direction and the dry paper sheet will be narrower than the distance between the two deckle straps. The chief factor is the furnish; the slower the pulp, the greater the amount of shrinking. In the case of free pulps, the shrinking usually does not exceed 2.75-3 per cent, whereas slow pulps may shrink 4.5 per cent and more, pulp for glassine paper is an example. Another important factor is the temperature in the drying cylinders, whereas basis weight and thickness of the web do not exert an appreciable influence. In changing from narrow webs to the full width of the machine troubles are often encountered, due to the uneven wear of the used and unused portions of the rolls and felts.—C.J.W.

Tri-tab for Rolls of Web Material. Jesse F. Keville, assignor to Nekoosa-Edwards Paper Co. U. S. pat. 2,094,454 (Sept. 28, 1937).—The invention provides a strip of pull tabs (to facilitate opening the rolls) to be applied across a number of narrow rolls of paper formed by slitting and rewinding a wider web while the rewound rolls are still side by side on the rewinding shaft. (Cl. 206-59).—A.P.-C.

Paper Cleaning Device. Carle J. Merrill. U. S. pat. 2,082,411 (June 1, 1937).—Particles of dirt,, etc., are removed from the surface of a finished web of paper by means of properly controlled and directed jets of compressed air. (Cl. 15-14).—A.P.-C.

Extractor Press. Wochbl. Papierfabr. 68, no. 16:303; no. 20:376; no. 21:402 (April 17, May 15, 22, 1937); B. I. P. C. 8:63.—The inquirer intends to install an extractor press in a combined cylinder board machine. He asks for operating data with regard to dewatering efficiency, effect on caliper, frequency of wire exchange, and reduced wear of felts. Two replies are in every point in favor of the extractor roll; a third answer admits that power consumption and felt wear are higher with suction rolls; it is pointed out, however, that extractor rolls cause a large amount of waste and affect the caliper, the more, the higher the pressure. Conditions should be studied by an expert before deciding on the type of installation.—C.J.W.

Impressions on the Rubber Jacket on the Central Press. Wochbl. Papierfabr. 68, no. 14:267; no. 17:323; no. 18:343; no. 20:376 (April 3, 24, May 1, 15, 1937); B. I. P. C. 8:64.—The rubber cover of the central press roll of a Yankee machine for making tissues shows wave-like indentations in the rubber cover, starting with both ends of the roll, after 8-10 weeks' operation. The following remedies are suggested: a harder rubber for the cover, reducing the pressure, regrinding the smoothing cylinder which wears more on the ends than in the center of the roll and examining its circumference for perfect roundness, and correcting eventual irregularities.—C.J.W.

Offset Press. Wochbl. Papierfabr. 68, no. 14:267; no. 16:303 (April 3, 17, 1937); B. I. P. C. 8:64.—The inquirer asks for the correct hardness of the rubber roll of an offset press, when the upper roll is a stone roll. Advice is also sought regarding the arrangement of the rolls, whether the stone roll should be the top or bottom roll. The hardness of the rubber roll should preferably lie between 28 and 32 plastometer readings (Pusey & Jones); the rubber roll should always be in the lower and the stone roll in the top position.—C.J.W.

Miscellaneous

Durability of Paper. M. Kometani. Cellulose Ind. (Tokyo) 12:35-37 (1936).—Book papers on

exposure to sunlight suffer loss of tensile strength and folding endurance more in the machine- than in the cross-direction. Bursting strength is not appreciably affected. Sizing degree is much reduced, while the expected increase in copper number and acidity and decrease in alpha-cellulose content occur. —A.P.-C.

Yellowing of Wood Pulp Paper. H. Bakker. Chem. Weekblad 34:543-545 (1937); B. C. A. 1937B:1037.—When wood pulp paper is exposed to oxygen and light, the lignin is converted into a humic acid, soluble in 0.5 per cent ammonium hydroxide and affording vanillic acid on sublimation and various phenol derivatives and oxalic acid on fusion with potassium hydroxide.—C.J.W.

Chemical Engineering in the Pulp and Paper Industry. T. Linsey Crossley. Can. Chem. Met. 21:104-109 (April, 1937).—A general discussion of the chemical pulps (sulphite, soda and kraft) and an outline of the various processes involved in paper production.—A.P.-C.

Transparent Pictures in Paper. Paul Klemm. Wochbl. Papierfabr. 68, Special Number: 25-29 (July 2, 1937).—The meaning and significance of water-marks.—J.F.O.

Concerning a New Method for Measuring the Moisture in the Air and the Installation in the Operation of a Paper Mill. A. Karsten. Wochbl. Papierfabr. 68, no. 33:613-15 (Aug. 14, 1937).—After explaining the terms and a few of the more common instruments for determining the relative humidity, the author describes a new instrument based on the change in electrical resistance. Certain apparatus used in the conditioning of paper are described.—J.F.O.

Measuring Device for Measuring the Thickness of Moving Bands of Great Length. Deutsche Dunlop Gummi Compagnie A.G. Ger. pat. 642,597 (Jan. 29, 1936).—The measuring device is used together with a conveyor roll but fastened in such a manner as to be independent of same.—J.F.O.

Variations in the Basis Weight of Paper. Wochbl. Papierfabr. 68, no. 31:578-80 (July 31, 1937).—The author discusses all the various causes for variations in the basis weight of paper, from the beaters where the quantity and also the moisture content of the stock furnished varies and the amount of water used when dropping the beater is not constant, to machine conditions from the wet end to the calenders.—J.F.O.

Concerning the History of the Manufacture of Paper in Tirol, Vorarlberg, and in the Near-by Districts. Viktor Thiel. Wochbl. Papierfabr. 68, Special Number: 9-19 (July 2, 1937).—Detailed account of the personages, mills, etc., concerned with the manufacture of paper in Tirol and nearby districts.—J. F. O.

Nomographs in the Pulp and Paper Industry. Hans Kotte. Zellstoff u. Papier 17, no. 9: 395-98 (September, 1937).—The nomographs presented are: conversion of metric to English units, power consumption and production in the manufacture of ground wood, beating degree and stock consistency, control of the combustion of sulphur in a pyrities oven, control of the alum concentration, and calculation of the length of a roll of paper.—J. F. O.

Report Concerning the Papers Given at the Summer Meeting of the German Association of Pulp and Paper Chemists and Engineers, in Wiesbaden on July 2, 1937. Papier-Fabr. 35, No. 32: 305-12 (Aug. 6, 1937).—The first paper, "Changes in the thickness swelling volume of pulp in technical processes," by G. Jayme, stresses the value of this test for controlling and evaluating said processes. "Meaning and importance of water marks," by Armin Renker concerns the use of water marks during the early stages of paper making. Report of the committee for artificial silk, cell wool and foil, concerns mostly organization and standardization of the industry. Report of the committee for accident prevention by F. Greulich concerns means for making mills safer. The sulphite digestor is under discussion; progress of the committee for power and heat economics and report of the committee for pulp testing are also reviewed in brief.—J. F. O.

Vegetable Plastic and Process of Manufacture. Chandeysson. Fr. pat. 814,968.—The product consists of a mixture of chemical or mechanical wood pulp, a binder such as clay and an adhesive such as casein, which is molded and air- or oven-dried.—A.P.-C.

Printing with Rapid Drying Inks. Charles MacArthur. Paper Trade J. 105, No. 15: 37-38 (Oct. 7, 1937).—A review of some of the problems met with in the use of rapid drying inks such as Vaporin in printing.—A.P.-C.

Welding and Cutting Applications in Pulp and Paper Mills. Anon. Pulp Paper Mag. Can. 38:687-688 (Sept., 1937).—Various useful applications of bronze welding and bronze surfacing are indicated. —A.P.-C.

Johnston Pulp Fiber Classifier Tested. Anon. Pulp Paper Mag. Can. 38: 692 (Sept., 1937).—Comparison of two commercially built Johnston Fiber Classifiers, one new and the other which had been in use for over 5 months, gave satisfactory agreement and showed that with reasonable care the accuracy of the machine will remain unchanged over long periods.—A.P.-C.

Heat and Power Production and Transmission. E. P. Wilmer. Tech. Assoc. Papers 20: 329-336 (June, 1937); Paper Trade J. 105, No. 13: 35-42 (Sept. 30, 1937).—A brief description of important installations or developments during 1936 in steam generation and distribution.—A.P.-C.

Printing Press Speed, Printing Ink and Printing Paper. Julius Bekk. Zellstoff u. Papier 17, no. 7:294-98 (July, 1937). In order to get the highest printing press speed, the paper must have the mechanical properties to prevent tearing and separating of its top layer and the printing ink must be such to offer the least resistance to splitting of the layer of ink already printed. Paper with the lower absorption and lower gloss has less chance of picking. Printing inks of equal adhesiveness have less tendency to picking the more viscose they are.—J. F. O.

To Make New Cutting Machine

Augustus Misch of 277 E. 239th St., Bronx, N. Y., announces that he will proceed with the manufacture of a new Automatic Guillotine Paper Cutting Machine. The claim is made that this cutter, provided with a new type of clamping device, can save as much as 65 per cent in driving power. The live power stored in the clamping housing is indicated so that the operator can set the clamping pressure and protect the machine from overloading and unnecessary strain.

Analysis of Electric Power Supply System for Pulp and Paper Mills*

By H. A. Travers [1]

Abstract

As many plants of the Pulp and Paper Mill Industry are expanding their electrical power supply and new plants require considerable electrical energy, it is important that careful thought and planning be given to the distribution of electrical energy to the end that continuity of service is insured.

Due to the wide choice in standard circuit breakers from an interrupting ability feature, it becomes necessary during the planning stage to make calculations of possible short circuit current that may have to be interrupted and specify breakers that will adequately perform that function.

This paper deals almost exclusively with a discussion of the basic factors to be kept in mind and briefly outlines simple but sufficiently rigorous methods of calculation of short circuit values to insure that adequate switchgear shall be chosen for the specific problem.

It is the intention to confine this paper primarily to features of electrical circuit design problems that should be given consideration when expansion in electric power is contemplated or a new plant is under consideration. The ensuing discussion considers the power supply and distribution circuits as contrasted with motor control problems which is a special problem of its own. The development of electrical apparatus naturally has covered a broad field of application and there are necessarily many pieces of equipment such as circuit breakers, disconnecting switches etc., which due to inherent limitations in design have definite boundaries beyond which they cannot be used. It, therefore, becomes essential to determine the short circuit energy of the electrical supply system, in order that an intelligent choice of switchgear can logically follow.

By way of analogy, one would not use steam pipes designed for 200 pounds pressure in connection with a boiler designed for 400 pounds steam pressure. Similarly, if a given supply system can deliver short circuit energy on the order of 500,000 kv-a obviously breakers designed for lower interrupting ability should not be considered.

The selection of suitable switchgear equipment for any particular requirement may vary considerably in detail but certain fundamentals should always be borne in mind. These may be set forth in approximately the following order of importance.

(1) The switchgear should not subject the attendants to undue hazards even under abnormal conditions ensuing from electrical failure of apparatus or circuits.

(2) The arrangement should provide for the economic operation apparatus (i. e.) permit the use of machines, transformer or lines in such a manner as to secure maximum system efficiency.

(3) Simplicity should be the guiding point in the lay-out of the switchgear. Unnecessary complications tend to confuse operators and cause unduly high installation and maintenance costs.

(4) Coincident with simplicity, there should be that degree of flexibility which will permit such continuity of operation as may be commensurate with the class of service to be rendered. Some circuits may require duplication where continuity of power supply is of prime importance, when other circuits may not require such treatment.

(5) Obviously, the various elements entering into the make-up of the electrical system should be rugged and reliable. The physical arrangement should be such as to facilitate operation, inspection, maintenance and extensions. At the same time, have that degree of symmetry requisite to creditable appearance.

A brief review of the electrical characteristics of an alternating current supply system under normal or operation conditions and abnormal or fault conditions will be helpful in establishing a basis or background upon which an intelligent choice of switchgear can be based.

Every electrical system may be divided into three major components, generation, distribution and load apparatus. The impedance of these three components are quite definite for any normal load condition and determines the amount of power flow from the generators to the load. It naturally follows that the impedance of the distribution system should be as low as possible in order to obtain good voltage regulation at the load points and minimize distribution losses.

As the load changes the impedance of the generators and load varies accordingly, the major impedance change being in the load. The impedance of the distribution system remains a fixed value for any particular circuit arrangement.

A short circuit on the system means that a very low impedance path is shunted across the distribution system and is in parallel with some or all of the load depending on the system layout. Consequently, a very large current will flow which must be successfully opened by one or more breakers nearest the point of fault, depending on how many circuits can directly feed the fault location. The magnitude of this fault current depends of course, on the impedance from the point of fault back to the various generators and other synchronous machines connected to the system.

Synchronous machines (generators, synchronous motors etc.) change their reactance under fault conditions from an initial relatively low value to a much higher value depending on how long the fault is held on the system, how much excitation the synchronous machines have at the instant before the fault occurs, the type of synchronous apparatus and the amount of circuit impedance between these machines and the point of fault. The word transient is used to define

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the duration of time from the instant of short circuit until a sustained current flow is obtained, provided the fault is not cleared in the meantime. Obviously, the greatest transient disturbance of the system which can occur at the point of application of any circuit breaker, when the system is short circuited, governs the application of a suitable breaker. During a short circuit, the current usually rises to its maximum value during the first complete cycle and then diminishes in value at some rate of speed during the succeeding cycles until a steady condition again exists on the system. Fig. 1 shows a typical oscillogram record of the current in one phase winding of a generator when a fault occurs on the system relatively close to the generator. In this particular example, it will be noticed that the short circuit current is displaced from the x-axis for several cycles immediately following the instant of fault. Such a displaced current wave is called an asymmetrical one as compared to one that has equal values of half cycle waves on either side of the zero current line. The current wave during the transient period, may be symmetrical or asymmetrical with respect to the line representing zero current, depending upon the point on the voltage wave at which the short circuit occurred. In the case of 3 phase systems involving a three phase fault, obviously one or more of the phase currents will be asymmetrical. In the case of a single phase line-to-line short circuit, either condition may exist. Similarly, for a line to neutral short circuit if the system neutral is grounded.

The instantaneous values of the current within the first few cycles following a short circuit are frequently referred to an assumed zero line midway between the peaks. This value is used to calculate the electrical constants of a circuit such as impedance, reactance, etc.

The maximum asymmetrical value of the transient current in r.m.s. amperes when a short circuit occurs on an ordinary alternating current generator is approximately equal to 1.73 times the generated voltage immediately preceding the short circuit, divided by the total impedance in ohms of the circuit to the point of short circuit. The maximum symmetrical value of the transient current is approximately equal to 0.57 times the maximum asymmetrical value.

The transient of an electrical system at a point remote from the source of power supply will be different from that at the terminals of an alternating current generator. Its amplitude and duration will depend upon the electrical constants of the system and the distance between the point of short circuit and the source of power supply. In general, the greater the distance between the source of power and the point of short circuit, the less the amplitude of the transient and the shorter its duration.

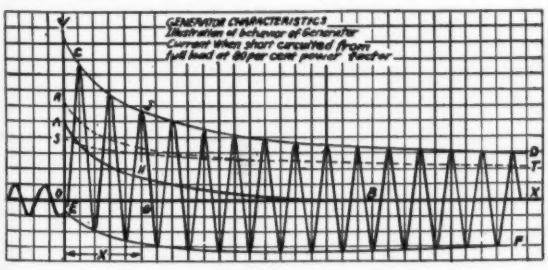

GENERATOR CHARACTERISTICS
Illustration of behavior of Generator
Current When short circuited from
full load at 80 per cent power Factor

FIG. 1.
Short-Circuit Characteristics of Generators

For average systems, a determination of the r.m.s. current that will flow at the instant the contacts part, irrespective of power factor or circuit conditions, will enable one to select the proper circuit breaker.

The r.m.s. current at any point of a system under short circuit conditions is affected by the following factors:

1. The total kv-a. reactance and transient characteristics of the synchronous machines connected to the system.
2. Number, reactance, resistance, and capacitance of all circuits over which power can be supplied to the point of short circuit.
3. Kv-a., arrangement, resistance, reactance and capacitance of all reactors and transformers through which power can be supplied to the point of short circuit.
4. Contact resistance at the short circuit.
5. The nature of the short circuit, whether single-phase, polyphase or phase to neutral.
6. The kv-a. and power factor of the load being carried at the time of short circuit.
7. The point of the voltage wave at which the short circuit was established.
8. The use of automatic voltage regulators.

In order to simplify calculations of possible short circuit current and obtain practical approximate results sufficiently accurate for the large majority of breaker applications, two methods will be briefly considered.

The simpler method and one quite generally used for the first approximation is to assume that the fault will give a symmetrical current wave and obtain the initial value of the symmetrical current wave. This can be quite readily obtained by computing the total system reactance to the point of fault in terms of line to neutral values. If this is expressed in ohms then dividing the line to neutral voltage (system voltage divided by 1.73) by the total ohms reactance, one obtains the initial instantaneous symmetrical value of fault current. For example assume a 2300 volt system. The line to neutral voltage is 2300/1.73 = 1330 V. Now if the ohms reactance to a particular point in the system amounts to 0.15, the initial instantaneous short circuit current equals 1330/0.15 = 8900 amperes (approximately). A circuit breaker capable of interrupting 8900 amperes or more should be used at that point in the system.

If other points on the system give greater or lower results a different class of breaker may be considered. Usually, however, in view of interchangeability of parts, provision for future expansion, etc., one class of breaker is generally applied to a particular system.

As will be amplified later, breaker ratings are in definite steps and obviously a breaker having an interrupting rating equal or greater than the maximum short circuit current should be chosen. Now then if the above method of calculation gives a result just above a standard breaker rating, it may be that a more rigorous calculation will indicate that it will not be necessary to use the next higher standard interrupting rating which is usually double that of the next lower rating.

The next step in obtaining a more rigorous calculation is to take into account the probability of the asymmetrical current wave, its rate of decay and the time required to open the breaker after the instant of fault. In order to simplify such calculations, use

is made of an accepted group of time-current decrement curves plotted between current and total system reactance in per cent. Knowing the total synchronous kv-a. capacity connected to the system, the minimum operating time of the breaker and the total system reactance to the point of fault, the probable value of short circuit current is readily obtained.

In order to use the decrement curves for breaker applications it is necessary to obtain the requisite data covering machines, transformers, reactors and lines.

When the problem involves existing equipment such data may be available or can be obtained and should be used whenever possible. For problems involving new projects either isolated or in combination with existing systems, average values of reactance may have to be used. Various tables, charts and curves are available in the principal switchgear manufacturer's handbooks to assist the prospective purchaser of breakers in arriving at the circuit or system limitations, so that a suitable breaker can be selected.

System reactance must be based on system kv-a. and not on the particular kv-a. chosen as a base for calculations. System kv-a. is the connected synchronous capacity in kv-a. which should include synchronous motors and converters as well as generators. Sub-transient reactance of synchronous machines must be used as the decrement curves are based on such values.

As resistance seldom comprises an important part of the total impedance, the total reactance may be considered, in most cases, as being quite adequate in view of other assumptions that must be made.

Decrement curves and factors for calculation of short circuit currents are shown in Figs. 2 and 3. They are based on Messrs. Hahn and Wagners' paper entitled "Standard Decrement Curves" published in the A.I.E.E. Transactions of 1932. The following assumptions are made:

(a) Transient characteristics for alternating current generators of normal design determined from oscillograph tests.

(b) That the effect of capacitance and resistance is neglected.

(c) That the contact resistance at short circuit is zero.

(d) That the alternating current generators are carrying full load, 80 per cent power factor previous to short circuit.

(e) That the short circuit was established at the point of voltage wave corresponding to the maximum possible instantaneous current.

(f) That no automatic generator voltage regulators are used.

(g) All reactance up to and including 15 per cent is considered within the generator. For values of reactance greater than that the difference is considered external.

(h) All machine e.m.f.'s are assumed to be and remain in phase.

(i) The load is assumed to be located at the machine terminals and the fault to occur on an unloaded feeder.

(j) The actual system subjected to fault may be represented by a single equivalent generator of the same total rating as the synchronous apparatus of the system and an equivalent external reactance.

The curves Figs. 2 and 3 have been plotted between per cent reactance and r.m.s. or effective value of the total short-circuit current for various values of elapsed time from the instant of short circuit until the circuit is interrupted.

The curves, while primarily for 3-phase systems, are also suitable for single-phase or two-phase generating systems and for multi-phase, single-phase, line-to-line and line-to-ground faults.

The characteristic shapes of the time current decrement curves have been obtained by analysis of generator tests including oscillograph studies of short circuits occurring when the generators were excited

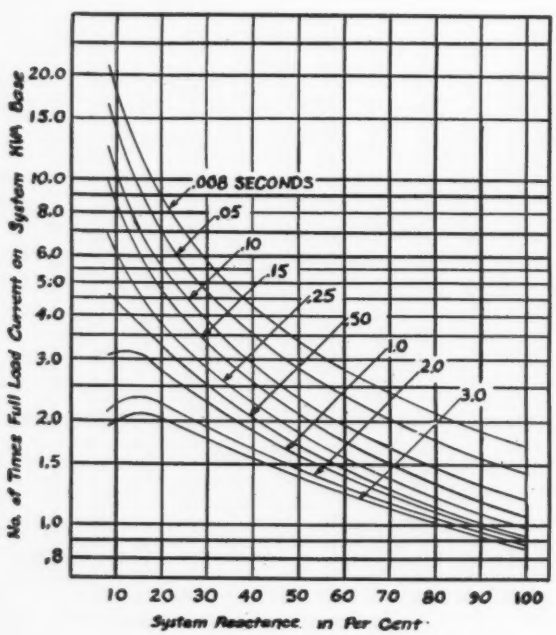


FIG. 2.
Short-Circuit Decrement Curves—Three Phase

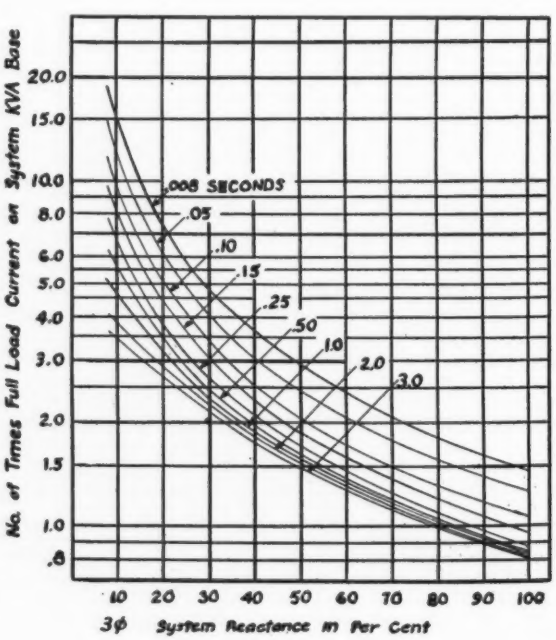


FIG. 3
Short-Circuit Decrement Curves—Line-to-Line

to full voltage and were carrying various loads at various power factors.

In the curves for total reactances up to and including 15 per cent, the reactance is assumed to be wholly within the alternating current generators and for higher values of reactance the generators were taken at 15 per cent and due allowance made by calculation for the effect of the external reactances. In the latter case, if alternating current generators of other reactance had been used, the results would have been somewhat different, but the error is not large enough to be of practical importance.

The final values of the current, i. e., the sustained short-circuit current, have been assumed in accordance with experience and tests and are based on the behavior of machines of predominating design.

Several alternating current generators with the same reactance and synchronous impedance will not necessarily have the same rate of r.m.s. current decay. This has been considered in constructing the characteristic curves and the decrement curves may therefore, be safely taken as representing the greatest r.m.s. current that will be delivered by modern alternating-current generators of normal design.

The curves are applicable for selecting circuit breakers for systems as follows:

1. Single machines without external reactance.
2. Single machines in combination with external reactance.
3. Multiple machines with no external reactance.
4. Multiple machines in combination with external reactance.

Calculating on Per Cent or Ohmic Base

It will be observed that tables for machines and transformers and the decrement curves give data in terms of percentage reactance while tables for line and cable reactances are usually given in terms of ohms at 60 cycles.

By definition the percentage reactance of a device or circuit is the product of its reactance in ohms by the normal full-load current of the circuit or device, expressed as a percentage of the normal voltage for the same case. The percentage reactance of a device or circuit is usually expressed as X per cent on the normal kv-a. rating of the device or circuit.

It is necessary of course, to use the same units for all parts of a system when making calculations for short circuits. Either the percentage reactance on a particular kv-a. base or ohmic values on a particular voltage base may be used. Either set of values may be readily transferred to the other by the simple formulae:

$$\text{Percent reactance} = \frac{\text{ohms} \times \text{kv.-a.}}{(\text{kv.})^2 \times 10}$$

or the converse:

$$\text{Ohms} = \frac{\text{Percent reactance} \times (\text{kv.})^2 \times 10}{\text{Kv.-a.}}$$

Generally for the simpler problems the percentage reactance method gives the minimum amount of work and final total reactance to the point of fault can be used directly with the decrement curves.

When circuits or devices of different normal voltages are connected through transformers the percentage reactances of the various circuits may be combined provided all are expressed on the same kv-a. base. The percentage reactance on any kv-a. base can be readily expressed on another base by multiplying the given percentage by the ratio between the two kv-a. bases. Thus to change 4 per cent reactance based on 2000 kv-a. to a 10,000 kv-a. base multiply

$$4 \text{ per cent} \times \frac{10000}{2000} = 20 \text{ per cent on 10,000 kv.-a. base.}$$

Obviously percentage reactance values may be combined in series or parallel provided the values are expressed on the same kv-a. base. While any arbitrary kv-a. base may be chosen for calculation purposes, a base corresponding to the total synchronous machine kv-a. capacity of the system must be employed in order to apply the decrement factors as given in curves in Figs. 2 and 3.

In many cases, it may be desired to calculate the possible short circuit current on the low secondary side of a transformer bank. When the kv-a. rating of the bank is small with respect to that of the synchronous apparatus from which it receives energy, approximately 25 per cent or less, the calculations can be considerably simplified by assuming that the voltage on the primary side of the transformer will be substantially maintained at normal under fault conditions on the secondary side. In such cases, only the reactance of the transformer bank need be considered to obtain the maximum short circuit current. This may be expressed by the simple formula:

$$\text{Maximum secondary s.c. current} = \text{full load sec. current} \times \frac{100}{\text{Per cent Transformer reactance.}}$$

In such cases, the transient dies out in a very few cycles, before the breaker can open and therefore, decrement curves are not required.

In the case of low voltage distribution such as 440 V. or lower, the reactance of secondary transformer leads to the low tension bus becomes of importance, likewise contact resistance both of which are generally neglected for higher voltage systems, due to their relatively small value. The effect of lead reactance or contact resistance may be appreciated by considering for example a 440-volt system. The line to neutral voltage is $440/\sqrt{3} = 254$ volts.

Assume for example, that a 1000 kv-a. transformer bank with a 440-volt secondary is fed from a supply system having 5000 kv-a. or more of generating capacity. The ohms reactance in terms of secondary voltage in accordance with equation given above, based on a 4 per cent transformer reactance is:

$$\text{Ohms} = \frac{4 \times .44^2 \times 10}{1000} = .00774 \text{ ohms}$$

The short circuit at transformer terminals $= 254/0.00774 = 32800$ amp. (approx.). If additional lead reactance of 0.01 ohm is added to the transformer reactance, the resultant short circuit current is reduced to:

$$\frac{254}{.00774 + .01} = \frac{254}{.01774} = 14{,}300 \text{ Amperes. (approx.)}$$

or less than half the value obtained by using the transformer reactance alone. Of course, the lead and contact resistance may not always attain the value of 0.01 but the point at issue is fully demonstrated by the example.

Circuit Breaker Ratings

A few words regarding ratings of standard breakers may be opportune at this point. Since these ratings are fixed for a particular design it becomes obvious that the system characteristics must not permit exceeding any of the breaker limitations otherwise, a proper selection has been nullified.

Circuit breakers are rated according to the following:

1. Maximum voltage at which the breaker can be operated.
2. Maximum continuous current with respect to a definite temperature rise.
3. Maximum r.m.s. current which the breaker will carry for any time, however small, up to a time of one second.
4. Maximum r.m.s. current which the breaker will carry for five seconds.
5. Interrupting current ratings. (a) at rated voltage (b) maximum current limit.
6. Time from energizing trip coil with normal voltage until circuit is interrupted at 25 per cent to 100 per cent of interrupting rating.

In choosing an oil breaker for a particular circuit so that satisfactory service may be expected, it naturally follows that the limitations imposed by a given breaker rating must not be exceeded in any respect, otherwise excessive maintenance or other unsatisfactory manifestions will be experienced.

The standard continuous current ratings of oil circuit breakers are based on the maximum r.m.s. amperes that the breakers will carry continuously under usual service conditions without exceeding the heating limits specified in the Standardization Rules of the N.E.M.A. and A.I.E.E., provided the connections to the breakers do not exceed these limits and all contact surfaces are kept clean and in proper adjustment.

All breakers up to and including 15,000 volts are maximum rated unless listed otherwise and should not be applied to systems in excess of such voltage ratings. Breakers rated 23,000 volts and above have normal voltage ratings with 5 per cent tolerance. While these breakers are designed to operate normally at a voltage not to exceed rated voltage, the 5 per cent tolerance above rated voltage is provided to meet emergency conditions.

Interrupting ratings and breaker characteristics, as published by the principal switchgear manufacturers are based upon N.E.M.A. Standards.

The first two ratings are based on normal system conditions, namely, the system voltage and maximum continuous load current expected through the circuit.

The remaining ratings require determination of the transient conditions of the system as outlined above. In general, due to the fact that complete asymmetry must be assumed in case of a short circuit, the ratio between the momentary (first half cycle asymmetrical r.m.s. current) and the current, the breaker may have to interrupt, will be approximately 1 to 1¼ and usually more due to the fact that it takes a few cycles for the breaker to open after the trip coil is energized. It is usually considered best practice not to include any relay time because such timing is adjustable and for obvious reasons the worst possible condition should be considered.

Published interrupting current rating of breakers are given for the maximum voltage rating of the breaker, with the statement that if a given breaker is used on a lower voltage than that for which it is rated, an increase in interrupting current is permissible at the service voltage, inversely proportional to the difference in voltage but not exceeding the maximum current interrupting rating of the breaker regardless of the system voltage.

It will be observed that in tables of standard breaker ratings, this maximum current interrupting rating is often equal to the maximum momentary current rating. That is merely an indication of breaker design characteristics, and means that whichever factor is the limiting one, must be observed. For example a particular breaker may have the following ratings:

Voltage	7,500
Maximum continuous current (amps.)	600
Short time 1 sec. or less (amps.)	50,000
Short time 5 sec. (amps.)	30,000
Maximum current interrupting (amps.)	30,000
Current interrupting at rated voltage (amps.)	4,000

Assume this breaker is used on a 2500-volt circuit. Its interrupting rating is $7500/2500 \times 4000 = 12{,}000$ amps. at 2500 volts. In this case, the ratio between the 1 sec. momentary rating and interrupting rating at 2500 V. is $50000/12000 = 4.16$ and there would be no question about an arbitrary limitation of interrupting rating.

However, take another example. A certain lower "power level" breaker has the following characteristics:

Voltage	15,000
Continuous current rating (amps.)	600
1 sec. rating (amps.)	25,000
5 sec. rating (amps.)	25,000
Maximum current interrupting rating (amps.)	20,000
Current interrupting rating at rated voltage (amps.)	2,000

Assume this breaker is to be used on a 440-volt circuit. Its current interrupting rating according to formula for lower voltage would be calculated as follows: $15000/440 \times 2000 = 68{,}000$ amp. This value, however, cannot be used since it exceeds the 20,000 amp. maximum current interrupting rating. Neither can the 20,000 amp value necessarily be used. The minimum time of opening for that breaker with induction relay trip is on the order of 0.10 sec. Refer to decrement curve Fig. 1. It will be found that the ratio between the time curve for 0.10 sec. and that for 0.008 sec. (first half cycle) for practically any system reactance varies between 1 to 1.5 and 1 to 1.4. This means that the 1 sec. rating of 25,000 amp. must be divided by 1.5 or 1.4 which gives as the maximum interrupting rating of the breaker at 440 volts, an average value of approximately 17,000 amperes instead of the 20,000 ampere limit.

Will Cover Vast Majority of Problems

While further refinements in calculations can be made if conditions warrant, it is felt that the foregoing discussion will cover the vast majority of problems confronting the engineers associated with the pulp and paper industry and allow them to choose adequate switchgear that will insure continuity of service to the motor drives of the mills. The greater the investment in pulp and paper machinery, the more important it becomes, that continued operation be assured. Consequently, when increased electric power supply is decided upon, suitable checks should be made to determine the adequacy of existing and proposed switchgear.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp

NEW YORK IMPORTS

WEEK ENDING APRIL 16, 1938

SUMMARY

Cigarette paper	1,253 cs.
Wall paper	6 bxs., 11 ctns., 7 cs.
Wall board	40 bdls.
Paper hangings	20 bls.
Newsprint	3,436 rolls, 32 bls.
Printing paper	1 cs.
Wrapping paper	3,174 rolls, 4 cs.
Drawing paper	5 cs.
Filter paper	19 cs.
Filter compound	25 bls.
Tracing cloth	27 cs.
Surface coated paper	69 cs.
Surface baryta coated paper	10 crates, 8 cs.
Metal covered paper	20 cs.
Parchment paper	47 cs.
Photo paper	15 cs.
Decalcomanias	6 cs.
Decalcomania paper	21 drums
Transfer pictures	9 cs.
Transfer paper	3 cs.
Writing paper	9 cs.
Shelf edging	30 ctns.
Tissue paper	42 bbls., 23 cs.
Crepe paper	1 ctn.
Gummed paper	3 cs.
Trunk boards	22 bls.
Wood pulp paper	10 cs.
Paper tubes	93 cs.
Miscellaneous paper	844 rolls, 256 bls., 97 cs.

CIGARETTE PAPER

De Manduit Paper Corp., *Ile de France,* Havre, 2 cs.
Champagne Paper Corp., by same, 1078 cs.
R. J. Reynolds Tobacco Co., *Manhattan,* Havre, 173 cs.

WALL PAPER

S. K. Lonegren, *Drottningholm,* Gothenburg, 6 bxs.
S. K. Lonegren, by same, 11 ctns. (wallpaper & tablecovers)
F. Blank Co., *Manhattan,* Havre, 7 cs.

WALL BOARD

——, *Blankaholm,* Sundsvall, 40 bdls.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Banker,* London, 20 bls.

NEWSPRINT

N. Y. Evening Journal, *Pr. Harding,* Hamburg, 180 rolls.
N. Y. Evening Journal, *Hallaren,* Norrkoping, 1399 rolls.
Jay Madden Corp., *Scanpenn,* Kotka, 339 rolls, 32 bls.
Jay Madden Corp., *Mormactide,* Kotka, 336 rolls.
Jay Madden Corp., *Manhattan,* Hamburg, 214 rolls.
N. Y. Evening Journal, by same, 143 rolls.
Perkins Goodwin & Co., *Deutschland,* Hamburg, 324 rolls.
Jay Madden Corp., *Deutschland,* Bremen, 501 rolls.

PRINTING PAPER

H. Reeve Angel & Co., Inc., *American Banker,* London, 1 cs.

WRAPPING PAPER

Alfred Bleyer & Co., *Pr. Harding,* Hamburg, 63 rolls.
Gilson Bros., Inc., by same, 1772 rolls.
Scharff Bros. Co., Ltd., *Black Tern,* Rotterdam, 2 cs.
Gilson Bros., Inc., *Manhattan,* Hamburg, 634 rolls.
Brooklyn Standard Bag Corp., by same, 705 rolls.
Hensel Bruckman & Lorbacher, *Deutschland,* Hamburg, 2 cs.

DRAWING PAPER

Devoe & Raynolds Co., *American Banker,* London, 1 cs.
H. Reeve Angel & Co., Inc., by same, 4 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *American Banker,* London, 19 cs.

FILTER COMPOUND

Mager Bros., Inc., *Deutschland,* Hamburg, 25 bls.

TRACING CLOTH

C. Bruning Co., Inc., *Europa,* Bremen, 17 cs.
Keuffel & Esser Co., *American Importer,* Manchester, 10 cs.

SURFACE COATED PAPER

Gevaert Co. of America, *Westernland,* Antwerp, 69 cs.

SURFACE BARYTA COATED PAPER

Globe Shipping Co., *Deutschland,* Bremen, 10 crates, 8 cs.

METAL COVERED PAPER

K. Pauli Co., *Deutschland,* Bremen, 20 cs.

PARCHMENT PAPER

E. Dietzgen & Co., *Deutschland,* Hamburg, 47 cs. (imitation)

PHOTO PAPER

J. J. Gavin & Co., *Pr. Harding,* Southampton, 6 cs.
Medo Photo-Supply Co., *Lancastria,* Liverpool, 4 cs.
Medo Photo-Supply Co., *Manhattan,* Southampton, 5 cs.

DECALCOMANIAS

Sellers Transportation Co., *Europa,* Bremen, 6 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *American Importer,* Manchester, 21 drums.

TRANSFER PICTURES

Rhoner Gehrig & Co., *Europa,* Bremen, 9 cs.

TRANSFER PAPER

D. C. Andrews & Co., *Deutschland,* Hamburg, 3 cs.

WRITING PAPER

R. H. Macy & Co., *Manhattan,* Havre, 1 cs.
H. W. Robinson & Co., *Deutschland,* Hamburg, 8 cs.

SHELF EDGING

S. K. Lonegren, *Drottningholm,* Gothenburg, 30 ctns.

TISSUE PAPER

Jay Madden Corp., *Pr. Harding,* Hamburg, 42 bbls., 1 cs.
——, *Kanto Maru,* Kobe, 16 cs.
Irving Trust Co., *Kirishima Maru,* Kobe, 6 cs.

CREPE PAPER

American Tissue Mills, *Olga,* Rotterdam, 1 ctn.

GUMMED PAPER

Heemsoth Kerner Corp., *Deutschland,* Bremen, 3 cs.

TRUNK BOARDS

Salwen Paper Co., *Drottningholm,* Gothenburg, 22 bls.

WOOD PULP PAPER

A. Giese & Son, *Maasdam,* Rotterdam, 10 cs.

PAPER TUBES

——, *Deutschland,* Hamburg, 93 cs.

MISCELLANEOUS PAPER

The Borregaard Co., Inc., *Drottningholm,* Gothenburg, 200 bls., 844 rolls.
H. Reeve Angel & Co., Inc., *Aobasan Maru,* Yokohama, 11cs.
A. Giese & Son, *Ile de France,* Havre, 56 bls.
Coty Processing Co., by same, 5 cs.
Standard Products Corp., by same, 17 cs.
Keuffel & Esser Co., *Manhattan,* Hamburg, 64 cs.

RAGS, BAGGING, ETC.

Jaffe Products Co., *Orizaba,* Havana, 81 bls. rags.
Hughes Fawcett, Inc., *Cameronia,* Glasgow, 49 bls. flax waste
———, *Pr. Harding,* Hamburg, 60 bls. bagging.
Irving Trust Co., *Olga,* London, 177 bls. rags.
R. Blank, *Black Tern,* Rotterdam, 83 bls. rags.
Great Eastern Packing & Paperstock Corp., by same, 79 bls. bagging.
Komfy Woolen Mills, *Scanpenn,* Copenhagen, 80 bls. rags.
———, *American Importer,* Manchester, 61 bls. rags.
———, by same, 22 bls. thread waste.
M. Snedeker Corp., by same, 136 bls. paper stock.
Empire Wiping Cloth Co., *Kirishima Maru,* Kobe, 50 bls. rags.
Rohner Gehrig & Co., *Ile de France,* Havre, 23 bags waste paper

CASEIN

American British Chemical Supplies, *Eastern Prince,* Buenos Ayres, 417 bags.

HIDE CUTTINGS, ETC.

———, *West Cusseta,* Madras, 35 bls. hide cuttings.
———, by same, 365 bls. hide fleshings.

OLD ROPE

G. W. Millar & Co., Inc., *Bristol City,* Bristol, 71 coils.
W. Steck & Co., *Maasdam,* Rotterdam, 15 coils.

WOOD PULP

Pulp Sales Corp., *Hallaren,* Kotka, 3898 bls. sulphite.
Perkins Goodwin & Co., *Blankaholm,* Sundsvall, 450 bls. sulphite.
Perkins Goodwin & Co., *Blankaholm,* Hernosand, 1500 bls. sulphite.
E. M. Sergeant Pulp & Chemical Co., by same, 300 bls. sulphite.
Irving Trust Co., by same, 600 bls. sulphite.
Central Hanover Bank Trust Co., by same, 600 bls. sulphite.
———, by same, 1980 bls. sulphite.
Gottesman & Co., Inc., by same, 1350 bls. prime unbleached sulphite.
Price & Pierce, Ltd., by same, 150 bls. unbleached sulphite.
E. M. Sergeant Pulp & Chemical Co., *Stavangerfjord,* Nygard, 150 bls. chemical pulp.
The Borregaard Co., Inc., *Stavangerfjord,* Sarpsborg, 1008 bls. sulphate.

WOOD PULP BOARDS

Flexideal Dry Mat Co., *Pr. Harding,* Havre, 15 cases.
Oliner Fibre Co., *Drottningholm,* Gothenburg, 45 bls.
H. Fuchs & Son, by same, 69 crates.
Jay Madden Corp., *Scanpenn,* Kotka, 119 rolls.
Jay Madden Corp., *Mormactide,* Kotka, 39 rolls.
Absorbo Beer Pad Co., *Manhattan,* Hamburg, 121 bls. (sheets)
Flexideal Dry Mat Co., by same, 70 bls. (sheets)

ALBANY IMPORTS

WEEK ENDING APRIL 16, 1938

Pulp Sales Corp., *Blankaholm,* Helsingfors, 1090 bls. sulphite
Pulp Sales Corp., *Blankaholm,* Kotka, 3137 bls. sulphite, 1450 bls. sulphate.
Gottesman & Co., Inc., *Blankaholm,* Hernosand, 2400 bls. prime bleachable sulphite.
Gottesman & Co., Inc., *Blankaholm,* Sundsvall, 1050 bls. prime bleachable sulphite.
Perkins Goodwin & Co., by same, 1200 bls sulphite.
———, by same, 559 bdls. wall board.

BOSTON IMPORTS

WEEK ENDING APRIL 16, 1938

———, *Lancastria,* Liverpool, 15 bls. rags.
G. F. Malcolm, Inc., by same, 38 cs. gauze carbonizing tissue paper.
G. F. Malcolm, Inc., by same, 4 cs. tissue paper.
Price & Pierce, Ltd., *Topeka,* ——, 750 bls. bleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 16, 1938

Keer Maurer Co., *Olga,* London, 141 coils, 3 bls. old rope.
O'Neill Bros. *Olga,* Antwerp, 14 bls. cotton waste.
Price & Pierce, Ltd., *Scanpenn,* Stockholm, 180 bls. sulphite, 30 tons.
Jay Madden Corp., *Scanpenn,* Kotka, 230 bls. wood pulp boards.

WILMINGTON IMPORTS

WEEK ENDING APRIL 16, 1938

Castle & Overton, Inc., *Hallaren,* Kotka, 2522 bls. wood pulp.
Pulp Sales Corp., by same, 1780 bls. sulphite.
Pulp Sales Corp., *Hallaren,* Rauma, 5165 bls. sulphite.
Pulp Sales Corp., *Scanpenn,* Kotka, 7350 bls. sulphite, 1470 tons.
Jay Madden Corp., by same, 761 bls. wood pulp boards, 88 tons.
Castle & Overton, Inc., by same, 3406 bls. bleached cellulose, 681 tons.

CHESTER, PA. IMPORTS

WEEK ENDING APRIL 16, 1938

Scott Paper Co., *Gypsum King,* Windsor, N. S., 286 bls. ground wood pulp, 38 tons.

BALTIMORE IMPORTS

WEEK ENDING APRIL 16, 1938

Price & Pierce, Ltd., *Mormactide,* Stockholm, 210 bls. bleached sulphite, 35 tons.
F. H. Shallus & Co., *Mormactide,* Kotka, 84 rolls newsprint.
Jay Madden Corp., by same, 256 rolls newsprint.
Castle & Overton, Inc., by same, 689 bls. unbleached cellulose, 96 tons.
Castle & Overton, Inc., by same, 1734 bls. bleached cellulose, 346 tons.
Jay Madden Corp., by same, 167 bls. wood pulp boards, 25 tons.
Johaneson Wales & Sparre, Inc., *Mormactide,* Gdynia, 450 bls. dry soda pulp, 45 tons.
Parsons & Whittemore, Inc., *City of Hamburg,* ——, 1125 bls. wood pulp.

NEW ORLEANS IMPORTS

WEEK ENDING APRIL 16, 1938

Parsons & Whittemore, Inc., *Konigsberg,* ———, 667 bls. wood pulp.

Get Massachusetts Paper Awards

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 18, 1938—The following are paper concerns to which bids were awarded on purchase of contract—second quarter ending June 30, 1938, Commonwealth of Massachusetts, Commission on Administration and Finance, Purchasing Bureau:

No. 1—270,000 lbs. M. F. Book paper, Tileston & Hollingsworth Co., City M. F. T & H mill, cased —less than 2,000 lbs. 5.85; 2,000 lbs. 5.60, 5,000 lbs. 5.35, 10,000 lbs. 5.20, 36,000 lbs. 5.10, 3,000 skids deduct 15c cwt.—2 per cent 30 prices for 3 months.

No. 2—200,000 lbs. 25 per cent rag bond, Rutter & McNaught, Inc., General brand, Collins Mill, 11.37 three of six months, 11.36½ nine months, colors $1.00 additional—2 per cent 30.

No. 3—90,000 lbs. No. 4 sulphite bond, Tileston & Hollingsworth Company, Brand Tiho, T & H mill, carton white 6.00, colors 6.50—2 per cent 30.

No. 4—20,000 lbs. 100 per cent rag ledger, Von Olker-Snell, Brand Parsons Linen, Parsons Mill, white 26.45, colors 27.45. less than ream plus 25 per cent—2 per cent 30.

No. 5—100,000 lbs. No. 1 sulphite ledger, Tileston & Hollingsworth Company, (on Eatonian Ledger) Brand Decade, Brightwater mill, white 7.50, colors 8.00, Brand Eatonian, Brightwater mill, white 8.00, colors 8.50—2 per cent 30.

No. 6—30,000 lbs. cover paper--Antique, John Carter & Company, Brand International, Chemical mill, white 7½ cents, black 9½ cents, red 10¼ cents.

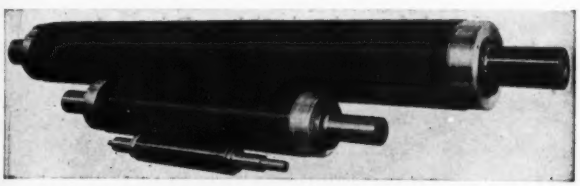
No. 7—9,500 lbs. No. 2 chemical manila, Storrs & Bement Brand No. 2 RR, 4.15C—uncut, cut sheets plus 50 cents cwt.

CALENDER

APPLETON • ROLLS

The added service that is actually built into Appleton Calender Rolls, their longer life and extra stamina are the direct result of building rolls with an eye on lowering operating costs through better roll performance. If you think that every saving in operating costs is worth looking into, find out more about Appleton Calender Rolls.

THE APPLETON MACHINE COMPANY
. Appleton . Wisconsin .



West Virginia Pulp and Paper Company

230 Park Ave. New York
35 East Wacker Drive Chicago
503 Market St., San Francisco, Cal.
Public Ledger Building, Philadelphia, Pa.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED
MACHINE FINISHED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

. . . .

KRAFT WRAPPING AND KRAFT ENVELOPE.
KRAFT CYLINDER BOARD.
BLEACHED SULPHITE AND SODA PULP.
BLEACHED AND UNBLEACHED KRAFT PULP.

MILLS:

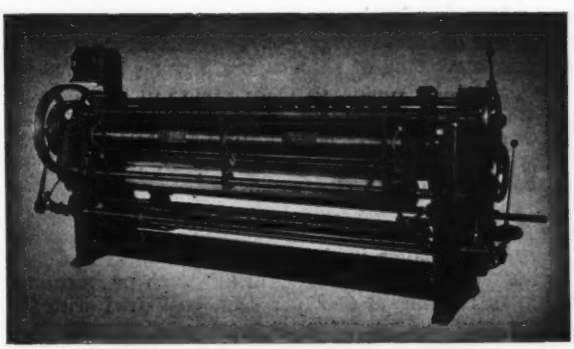
Mechanicsville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina.

HIGHEST GRADE CLAYS

PAPER MAKERS IMPORTING CO. INC. NORRISTOWN, PENNSYLVANIA, U.S.A.

COATING FILLING

POWDERED



A LINE OF MACHINES YOU CAN DEPEND ON

Complete details of any machine in our line are yours for the asking.

FOLDERS:
Napkins
Tissue
Towel
Wax Paper
Facial Tissue

PRINTING PRESSES
DIE-INKERS

CREPERS — EMBOSSERS — WINDERS

PAPER CONVERTING MACHINE CO.
GREEN BAY, WISCONSIN
Manufacturers of paper converting machinery for all purposes.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 20, 1938.

The wholesale paper market reflects a better tone for the week and while the improvement in demand for several grades of paper does not apply to the whole market, more optimism is heard in the trade and conditions as a whole are better. As the index of general business activity has leveled off since the downward trend in March, the opinion is expressed by some well informed distributors than an upward trend in general business may be expected soon. The paper industry has been consistently leading other industries in activity for many months, and any general improvement should result in a substantial increase in the sales volume of almost all paper and paper products.

Prices, in general, remain relatively firm. Some reductions below the prevailing market prices are reported in bristol board, following the reductions of $5 to $10 per ton in some grades of writing paper two weeks ago. lower paper and board prices are not expected in the near future and prices are fairly well maintained at what is quite generally believed to be a fair level.

The demand for newsprint continues active and the normal volume of shipments are going forward.

The sales volume of many grades of paper for the current week is reported as slightly higher. The demand for kraft papers for pre-Easter week was good. Little change is reported in tissues or box board for the current week.

Chemical Pulp

Little change in demand is reported in the chemical pulp market for the week. With production of mills running at 66.7 per cent, compared with 92.4 per cent last year, the large stocks of pulp on hand are being gradually consumed. The news of the week is the visit of executives of the Swedish and Finnish pulp manufacturers who are here to confer on the revision of prices. For the current week lower prices are quoted on Finnish pulp and announcement of an adjustment of other imported pulps is expected soon.

Mechanical Pulp

A substantial reduction in the prices of imported moist and dry mechanical pulp has been made this week, the reductions ranging from $4 to $6 per ton in moist pulp and from $10 to $11 in imported dry pulp, below the market prices which have prevailed for some time.

Old Rope and Bagging

The demand for old rope continues so very light that prices are virtually nominal. The old bagging market is also extremely quiet and no change in prices are reported for this week.

Rags

The rag market is quiet. Demand is so light that quotations are practically nominal for many grades of new and old domestic rags. The foreign rag market is inactive and nominal prices prevail.

Waste Paper

The waste paper market is quiet as demand continues extremely light for almost all grades of paper stock. Prices are practically nominal, with quotations of many grades at record low levels. No change in prices are reported for this week.

Twine

The demand for twine is light. Prices of some grades of soft fiber twines are lower but in general prices remain at prevailing levels, with the trend in demand and prices uncertain.

Import Committee to Assist

Importers have taken the following cases to the United States Customs Court and the Import Committee of the American Paper Industry will assist the Government in defending the action of the Customs officials in levying the higher rates of duty.

(a) Pulpboard 10 and 11 points in thickness, imported by a Brooklyn box manufacturer from Canada, classified for duty at 30 per cent as paper not specially provided for, claimed by importer to be dutiable at 5 per cent as pulpboard in rolls for use in the manufacture of wallboard.

(b) Text liner imported from Canada by a Brooklyn box manufacturer, classified for duty at 20 per cent, claimed by the importer to be dutiable at 5 per cent as pulpboard in rolls for the manufacture of wallboard.

(c) Three shipments of Austrian beer mat board classified for duty at 30 per cent, claimed to be dutiable as plain board at 10 per cent.

(d) Groundwood paper imported from Austria, weighing 37 and 45 pounds per ream, classified for duty as printing paper, claimed by importer to be duty free as standard newsprint.

Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Aril 20, 1938—The Division of Public Contracts has announced that during the first quarter of this year 197 paper and allied product contracts were entered into by various government departments under the Walsh-Healey Act. These contracts were valued at $13,500,000 and constituted 3.38 percent of the total contracts granted during that period.

MIRROR FINISH

Distinctive—yes. Recognized by machine buyers everywhere. Every CUMBERLAND SHAFT is accurate, concentric and perfectly straight . . . assembles into machines in minimum time . . . performs perfectly for the life of the product. Represents premium quality—without premium price.

TOLERANCES
SPECIAL (Any Diameter)
LIMITS ± 0.0005"
or any other total tolerance of 0.001"
STANDARD
Small Dia. { +0.000" −0.005"
Large Dia. { +0.000" −0.001"

Of the three CUMBERLAND brands, there's one exactly suited to your purpose—and fully described in literature that's yours for the asking. Write—

CUMBERLAND STEEL COMPANY
CUMBERLAND, MARYLAND

NOTE: Headline of this advertisement is reflected in CUMBERLAND STEEL SHAFT taken right from stock and in no way polished or specially prepared.

Mundt

Perforated Screens
For Pulp and Paper Mills

Steel, Copper, Brass
Bronze, Monel Metal
and Other Alloys
Punched for Centrifugal
and Rotary Screens,
Pulp Washers, Drainer
Bottoms, Filter Plates, etc.

Charles Mundt & Sons
67 Fairmount Ave. Jersey City, N. J.

WOOD PULP
AGENTS

PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
NEW YORK

WORTHINGTON EQUIPMENT
for the PULP AND PAPER MILL

A COMPLETE LINE OF PUMPS FOR:

- General water supply
- Waste disposal
- Sump and general drainage
- Fire protection
- Suction-box or roll vacuum
- White water
- Pulp grinder pressure water
- Stock handling
- Liquors handling . . . for sulphite, sulphate (kraft), and soda processes
- Bleach solutions
- Acids, caustics and other chemicals
- Air conditioning and refrigeration

STEAM POWER PLANT EQUIPMENT:

- STEAM TURBINES
- BOILER FEED PUMPS
- CONDENSERS
- STEAM-JET AIR EJECTORS
- HOTWELL AND CONDENSATE PUMPS
- STEAM HEATING VACUUM PUMPS
- FEEDWATER HEATERS (deaerating and non-deaerating)
- †WATER METERS

OTHER EQUIPMENT:

- DIESEL AND GAS ENGINES
- COMPRESSORS (air and gas)
- WET AND DRY VACUUM PUMPS
- V-BELT DRIVES
- REFRIGERATION AND AIR CONDITIONING EQUIPMENT

† *Through subsidiary, Worthington-Gamon Meter Company*

● ***Literature on Request***

The services of qualified engineers are available for assistance in selecting the proper equipment for each requirement.

WORTHINGTON PUMP AND MACHINERY CORPORATION
General Offices, HARRISON, NEW JERSEY • *Branch Offices and Representatives in Principal Cities throughout the World*

CDB-13

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 20, 1938.

BLANC FIXE—The prices of blanc fixe continue firm and conform to prevailing quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is quoted at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—The price of bleaching powder is firm and unchanged at prevailing quotations. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein continues fair. Prices are unchanged for the current week. Domestic standard ground casein is quoted at from 7¼ to 8 cents per pound; domestic finely ground at from 8 to 8½ cents per pound, all prices in bags, car lot quantities.

CAUSTIC SODA—Prices of caustic soda are firm and conform to prevailing quotations. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The prices of china clay are reported as firm and unchanged at prevailing quotations. Imported clay is quoted at from $14.50 to $25 per ton, ship side. Domestic filler clay is offered at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—The price of chlorine is firm and unchanged at prevailing quotations. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The demand for rosin continues about on the level of the preceding week. Prices of some grades are slightly lower. "G" gum rosin is quoted at $4.70; wood rosin at $4.75 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is quoted at $2.66 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices of salt cake are firm and unchanged at prevailing quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—The prices of soda ash are firm and conform to prevailing quotations. Prices of soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The prices of corn starch are reported firm and conform to the quotations of the preceding week. Globe pearl is quoted at $2.60 per 100 pounds, in bags, and at $2.85 in barrels. Special paper starch is quoted at $2.70 per 100 pounds, in bags, and at $2.95 n barrels. All prices in car lots, f.o.b., Chicago.

Sulphate of Alumina—The prices of sulphate of alumina continue firm and unchanged at prevailing quotations. The commercial grades are quoted at from $1.25 to $1.60 per 100 pounds; iron free at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR—The prices of sulphur continue firm and unchanged at prevailing quotations. Annual contracts are quoted at $18 per long ton, f.o.b., cars at mines. Spot and nearby car lots are offered at $21 per ton.

TALC—The talc market reports prices as firm and unchanged at prevailing quotations. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$5.25	@	—
Superstandard	5.00	@	—
Northern Standard Wrapping	4.75	@	—
Standard Wrapping	4.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.80	@	—
Bleached	2.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	$8.25	@	$10.25
No. 2 Jute	7.50	@	9.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Boards, per ton—			
News	$30.00	@	—
Chip	30.00	@	—
Sgl. Mla. Lt. Chip	45.00	@	—
Jute Lined Chip	45.00	@	—
White Pat. Coated	57.50	@	—
Kraft Liners	55.00	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$41.40@$48.50	$42.55@$50.00
100% Rag	32.80@ 38.50	33.95@ 39.75
85% Rag	.....	32.20@ 37.75
75% Rag	24.75@ 29.00	25.90@ 30.50
65% Rag	21.65@ 26.25	22.80@ 27.75
50% Rag	18.70@ 22.75	19.90@ 24.25
25% Rag	15.80@ 19.25	16.95@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.80@$10.75	$9.95@$12.00
No. 2	7.90@ 9.50	9.05@ 11.00
No. 4	7.00@ 8.50	8.20@ 10.00

Colors .75 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.15	@$14.25
No. 2 Glossy Coated	10.55	@ 12.25
No. 3 Glossy Coated	9.35	@ 11.00
No. 4 Glossy Coated	8.80	@ 10.50
No. 1 Antique (watermarked)	8.80	@ 10.50
No. 2 Offset	8.05	@ 9.50
A Grade E. F.	7.90	@ 9.50
A Grade S. & S. C.	8.15	@ 9.75
B Grade E. F.	7.30	@ 8.75
B Grade S. & S. C.	7.55	@ 9.00
C Grade E. F.	7.00	@ 8.50
C Grade S. & S. C.	7.25	@ 8.75
D Grade E. F.	6.75	@ 8.25
D Grade S. & S. C.	7.00	@ 8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	27.00	@30.00
Dry	27.00	@30.00

(Delivered)

No. 1 Domestic and Canadian	29.00	@33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Prime Bleached Sulphite	3.00	@ 3.50
Prime Qualities—		
Easy-Bleaching Sulphite	2.50	@ 2.75
Strong Unbleached Sulphite	2.25	@ 2.50

(On Dock, Atlantic Ports)

Kraft Bleached	3.00	@ 3.25
Kraft Light & Strong	2.50	@ 2.75
Kraft No. 1	2.25	@ 2.50
Kraft No. 2	1.90	@ 2.00

(F.o.b. Pulp Mill)

Kraft Domestic	2.00	@ 2.50

(Delivered)

Soda Bleached	2.90	@ —

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	6.50	@ 6.75
Silesias No. 1	5.00	@ 5.25
New Unbleached	7.00	@ 7.25
Blue Overall	5.50	@ 6.00
Fancy	3.00	@ 3.10
Washables	2.10	@ 2.25
Mixed Khaki Cuttings	3.60	@ 3.75
O. D. Khaki Cuttings	4.35	@ 4.50

Old Rags

White, No. 1—		
Repacked	3.40	@ 3.50
Miscellaneous	2.75	@ 3.00
White, No. 2—		
Repacked	2.10	@ 2.25
Miscellaneous	1.70	@ 1.80
Thirds and Blues—		
Repacked	1.40	@ 1.50
Miscellaneous	1.25	@ 1.30
Roofing Rags—		
No. 1	.90	@ .95
No. 2	.70	@ .75
No. 3 (bagging)	.65	@ .70
No. 4	.65	@ .70
No. 5A	.65	@ .70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@ 2.40
New Mixed Cuttings	2.00	@ 2.20
New Light Silesias	5.50	@ 5.75
Light Flannelettes	5.50	@ 5.75
New White Cuttings	7.00	@ 7.50
New Light Oxford	4.00	@ 4.50
New Light Prints	3.00	@ 3.25

Old Rags

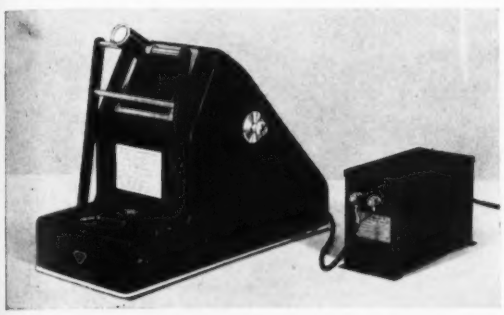
No. 1 White Linens	7.50	@ 8.00
No. 2 White Linens	6.50	@ 7.00
No. 3 White Linens	4.50	@ 5.00

Let us take care of your REJECTIONS, over-runs or seconds.

We have branches in fourteen different cities and can sell your rejections for you at a minimum expense to you; wherever they occur.

THE SABIN ROBBINS PAPER COMPANY

STATION A CINCINNATI, OHIO



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CENTRIFUGAL PUMPS FOR ALL PAPER MILL PURPOSES

ASH CONVEYORS——————STOKERS

THE FREDERICK IRON & STEEL CO.

FREDERICK, MARYLAND

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons..	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.20	@	2.25
Domestic	2.00	@	2.15
Wool Tares, light....	1.50	@	1.75
Wool Tares, heavy..	2.00	@	2.10
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	3.00	@	3.25
Domestic	2.75	@	3.00
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.75	@	2.00
Mixed Strings.....	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.25	@	2.35
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.80	@	2.20
Flat Stock—			
Stitchless	.70	@	.80
Overissue Mag.....	.60	@	.70
Solid Flat Book...	.55	@	.60
Crumbled No. 1....	.40	@	.45
Ledger Stock.....	.90	@	.95
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.85	@	2.00
New Cuttings.....	1.50	@	1.60
Old Kraft Machine—			
Compressed bales..	.70	@	.80
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.45	@	.50
Strictly Folded....	.20	@	.25
No. 1 Mixed Paper..	.05	@	.10

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.12½	@	.14
White Hemp.....	.13½	@	.15
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09	@	—
Paper Makers.....	.08	@	.09½
Tube Rope.....	.10¾	@	.11½
Wall Paper.....	.10¾	@	.11½
Wrapping	.12	@	.14
Soft Fiber Rope...	.10¾	@	.11¼
Cotton	.16	@	.22

(Hard Fiber)

Medium Java.....	.09	@	.10
Mex. Sisal.....	.08½	@	.09½
Manila	.18	@	.25
Domestic	2.25	@	2.50
Sisal Rope.....	1.65	@	1.75
Mixed Rope.....	.50	@	.55
Transmission Rope...	1.25	@	1.50
Soft Jute Ropes.....	1.90	@	2.00
Jute Carpet Threads.	1.00	@	1.50
Gunny Bagging—			
Foreign	2.20	@	2.25
Domestic	1.75	@	1.85
Bleachery Burlap....	3.25	@	3.75
Scrap Burlap—			
Foreign	1.65	@	1.80
Domestic	—	@	1.90
Scrap Sisal	1.25	@	1.50
Scrap Sisal for Shredding	1.75	@	1.90
Wool Tares, Heavy..	1.50	@	1.60
New Burlap Cuttings	1.85	@	2.00
Aust. Wool Pouches	3.00	@	—
Heavy baling bagging	2.00	@	—
Paper Mill Bagging.	1.50	@	1.60
No. 2 Bagging.....	.50	@	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.03	@	.03¼
New White No.1..	.06¾	@	.07
New White No. 2.	.05	@	.05½
New Light Flannelettes	—	@	.05½
Silesias No. 1.....	.05¼	@	.05½
New Black Silesias..	.03¾	@	.04
Silesias No. 1			
Soft Unbleached.....	.06¾	@	.07
Blue Cheviots.....	.05	@	.05½
Fancy	.03	@	.03¼
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls.....	.05	@	.05½
New Black, soft...	.03¾	@	.04
Khaki Cuttings....	.03¼	@	.03¾
D. D. Khaki.....	.04	@	.04½
Corduroy	.02¾	@	.01
New Canvas.....	.07¼	@	.07½
B.V.D. Cuttings.....	—	@	.06½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	1.00	@	1.10
Dutch Blues.....	2.75	@	2.90
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.50	@	2.60
Old Linsey garments.	1.75	@	1.90
New Silesias.....	6.00	@	6.50

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.05½	@	.06
New White, No. 2.	.03½	@	.04
Light Silesias.....	.04½	@	.05
Silesias, No. 1....	—	@	.04½
Black Silesias, soft.	.03	@	.03½
New Unbleached..	—	@	.06
Washable, No. 1..	.01¼	@	.01½
Blue Overall.....	.04	@	.04½
Linens, According to grades—			
Washable No. 2....	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales....	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03½	@	.04
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	2.25	@	2.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.00	@	1.25
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	.75
Domestic No. 1...	—	@	.75
Domestic No. 2...	.50	@	.65
Roofing Bagging..	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.75
Domestic	1.50	@	1.75
Manila Rope.....	3.00	@	3.25
Sisal Rope.....	1.75	@	2.00
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.25
No. 2.....	1.00	@	1.25
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings....	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.35	@	2.40
No. 2 Hard White.	2.00	@	2.10
No. 1 Soft White..	2.00	@	2.10
No. 2 Soft White..	1.40	@	1.50
No. 1 Mixed.....	.70	@	.75
Solid Ledger Stock..	1.50	@	1.60
Ledger Stock, white.	1.25	@	1.30
Ledger Stock, colored	.85	@	.90
No. 1 Books, heavy..	.85	@	.90
Manila Cuttings.....	1.50	@	1.75
Print Manila.....	.45	@	.50
Container Manila....	—	@	.40
Kraft Paper.....	.90	@	.95
No. 1 Mixed Paper..	.25	@	.30
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.55	@	.60
Old Newspapers	.30	@	.35

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.25	@	2.40
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light...	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.60	@	1.70
Manila Envelope Cuttings, extra quality	2.00	@	2.10
No. 1 Old Manila....	.85	@	.95
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.85	@	.90
Mixed Papers.....	.10	@	.12½
Print Manila.....	.45	@	.50
Container Manilas...	.27½	@	—
Old Newspapers.....	.25	@	.32½
Paper Wool Strings..	—	@	.50
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes....	.25	@	.27½
Kraft corrugated boxes	.25	@	.30
Screenings wrappers.	.45	@	.50

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	2.75

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.55	@	—
Blanks	.90	@	—
Krafts	.60	@	—
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila.....	Nominal		
Overissue News.....	.35	@	—
Old Newspapers —			
No. 1 Folded News	.30	@	—
No. 1 Mixed Paper	.20	@	—
Roofing Stocks—			
No. 1.....	2.00	@	2.10
No. 2.....	1.85	@	2.00

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35½	@	.36½
No. 1 Tints	.36½	@	.37½
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	—	@	.1550
No. 4 Tints	.16	@	.1650
No. 5 Bond—White	11.35	@	—
No. 5 Bond—Tints	12.35	@	—
No. 5 Bond—Golden Rod	13.35	@	—
No. 5 Ledger—White	.1185	@	—
No. 5 Ledger—Tints.	.1285	@	—
No. 6 Bond—White	10.75	@	—
No. 6 Bond—Tints	11.25	@	—
No. 6 Bond—Golden Rod	12.75	@	—
No. 7 Bond—White .	9.10	@	—
No. 7 Bond—Tints .	9.60	@	—
No. 7 Bond—Golden Rod	11.10	@	—
Book—			
No. 1 M. F.	7.10	@	7.35
No. 2 M. F.	6.85	@	7.20
No. 3 M. F.	5.60	@	6.20
No. 1 S. C.	7.60	@	7.85
No. 2 S. C.	7.10	@	7.35
No. 3 S. C.	6.10	@	6.35
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.00	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted.....	13.50	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.55
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.25
No. 1 Manila.....	5.50	@	7.00
Fiber	5.50	@	—
Kraft, No. 2	5.50	@	—

(F. o. b. Cars, Toronto)

News, per ton—			
Rolls (contract)..$46.00		@	—
Sheets 54.00		@	—

Pulp

Ground wood.....29.50		@	—
Unbleached Sulphite.54.00		@	—
Book (Class 1).....64.00		@	—
Writing (Class 2)....62.00		@	—
Select (Class 3).....63.00		@	—
Kraft 50.00		@	—
Soda 56.00		@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.25	@	—
Soft White.....	[illegible]	@	—
White Blk. News..	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	—
Light and Crumpled Book Stock.	.75	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.55	@	—
Kraft	1.00	@	1.55
News and Scrap—			
Strictly Overissue.	.55	@	—
Strictly Folded....	.50	@	—
No. 1 Mixed Paper..	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¾	@	.07
Fancy Shirt Cuttings	.02½	@	.03½